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Accent ON TEACHING

EXPERIMENTS IN GENERAL EDUCATION

Edited by
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SIDNEY J. FRENCH

FOREWORD

The Committee on General Education of the Association for Higher Education, at its April 1951 meeting, decided that a book on the role of the teacher in General Education was much needed. It was the Committee's unanimous opinion, too, that Sidney J. French was, by his insight and accomplishments, the person best qualified to edit such a volume.

Anyone who has ever tried to translate an educational theory into classroom practice is well aware of the difficulties involved. To apply the generalizations of psychology to the specific problems of teaching a group of students so as to reach certain predetermined educational objectives is no simple matter. Yet our theories and objectives, whether exalted or down to earth, mean little until work in the classroom shows that the theories are practicable and the objectives attainable. It must never be forgotten that orthodox attitudes, standards, and methods which answer well enough in one context, or for a given set of objectives, may be out of line when other individuals are involved, or when the circumstances are altered. Teaching is, of course, a process closely bound by the conditions and purposes imposed. A new formulation of objectives may well call for new methods of teaching as well as for a different emphasis on the subject matter, and for a change in academic organization. This, surely, is true in those General Education programs where the student—and not the teacher's vested interest in a subject—is considered the central focus of attention.

Too often in the last seventy-five years teachers have undervalued or ignored the contributions of psychology and sociology to the understanding of the learning process, and to the adjustment of the individual in the group. This has been true even of the disciplines which are concerned with the development and teaching of these newer educational concepts. From the research of several decades much has been learned about the educational needs of students with differing abilities and interests, and about how to meet those needs effectively. The more widely this knowledge is disseminated the better.

There are many problems still unanswered. Many have not even been realized. The data in a new field like General Education are still far from complete and certainly not conclusive. But we can discern general principles which indicate the direction we should follow. These principles, consistent with the principles of psychology and with the aims of General Education, are supported by a considerable body of evidence and experience.

The present volume is a timely addition to the literature on General Education. Those topics chosen for discussion center attention upon problems which are basic to the success of the whole General Education movement. The authors have been chosen for their practical experience, and for the contributions they have made in the understanding of these definite issues.

The members of the Committee on General Education are proud to have had a hand in initiating this project with its accent on teaching, because they are confident that the college teachers will find helpful suggestions and practical guidance for dealing with these issues, and with the students whom they would "gladly teach."

JUDSON R. BUTLER, Boston University,
Chairman, Committee on General
Education of the Association
for Higher Education

June, 1954

ACCENT ON TEACHING

SIDNEY J. FRENCH

INTRODUCTION. *THE PLACE OF GENERAL EDUCATION IN THE LIBERAL ARTS*

GENERAL Education is not new; many would say it goes back to Socrates and Plato. In the modern sense it already has a history of more than thirty years in America. During this period it has passed through several phases, the most significant of which was a strong forward surge coming on the heels of World War II. For those already immersed, this surge constituted a shift in emphasis from the survey courses typical of the 1930's, which were designed to straddle several disciplines and provide some conversant information, toward problem courses, which were more selective and dealt with *ways* of understanding and thinking in areas of culture and citizenship. Thus the center of gravity has shifted away from subject-matter coverage toward greater involvement of the student in his own mental processes.

Implicit in this shift should have been a shift in teaching philosophy. This has been slow in developing. It was the challenge that we have been spending too much time and energy tinkering with the curriculum in General Education and too little in experimenting with more effective teaching approaches that called for evidence of what is actually going on in the *teaching* of General Education today.

This volume, then, is both the result of a challenge and the product of those who *are doing something about it.*

College teaching is an old profession. That it has come under attack lately, and largely from within, is no secret. This is but a part of that vast revolution in higher education that is now taking place all over America. While the population of the nation has doubled in fifty years, the college population has increased tenfold, and it bids fair to outstrip this mark in the near future. The kind of transformation which began in the secondary schools nearly a half century ago is now under way at the college level.

Obviously, this kind of change faces colleges and universities with a host of new problems and challenges. College education for the majority is no longer a matter of training for a traditional profession or a technical pursuit. Certainly, we could never hope to absorb all college graduates into the old-line professions, and even with many newly emerging occupations competing for college-trained personnel, it is safe to say that these markets cannot possibly absorb all our graduates in normal times. But more and more, the college degree is becoming the door through which young men and women move into positions of all kinds. It is the "license" which guarantees, not technical competence, but a successful candidate ready to be trained by the organization for its own purposes.

Thus, superimposed on the college's traditional functions of training for old-line professions and the many developing specialties is the significant one of educating, not for making a living, but for living responsibly in an increasingly well-educated, complex, and expanding society—a society in which communication and transportation have overcome geographical barriers.

Generally speaking, college and university faculties have not yet faced up to these new problems confronting them. The reasons are numerous. First, the traditional training of college teachers has not fitted them to cope with such problems. The influence of the German universities in the late 1800's, with their emphasis on training in research, and the rise of the American graduate schools based largely on the German pattern have produced a type of graduate training in which the focus is that of research and specialization, not teaching. Rarely have the graduate schools, until recently, made any distinction between those candidates going into college teaching and those going into research and other scholarly pursuits. Indeed, it was the implicit philosophy of most graduate schools that a good research scholar would be, *a priori*, a good college teacher should he decide to enter the teaching ranks. And implicit in this philosophy was the assumption that college teaching was merely a matter of acquiring the necessary specialized information to be passed on to students. It has often been said (and usually with pride) that the college teaching profession is the only profession which insists that there be *no* preparation in the techniques of the job. Like many such statements this one is an overstatement and much incidental preparation for teaching, as distinguished from research and scholarship, is obtained through the apprentice system, in which graduate students conduct quiz sections, laboratory sections, grade papers, and in general are the drudges of the university. But the experience in teaching thus obtained is usually incidental, and often bad. The prime objective of the graduate student is to get his degree, with his job as assistant merely a helpful means, financially, to that end. The professor has little concern about how his assistants teach; he is far more concerned with how well they can carry on guided research—which means more publications for him. His own teaching of undergraduates consists of a series of prepared lectures; the *quiz* sections handled by assistants are rightly named; they are nothing more.

Thus the young Ph.D. comes with his scroll admitting him, as a learned man, to the college teaching profession; but he has little understanding of the complex nature of this profession. He is apt to look upon the profession as a suitable means to gain financial support while carrying on his own research. Under wise guidance he may in time become an effective *teacher*—at the expense of the students he first teaches and the institution that kindly gives him shelter during his trial period. This is the kind of college teacher our system of graduate training at its worst, is designed to produce. The wonder is that it has produced any fine teachers. It is fair to wonder how many more it might have produced had there been some inspired accent on teaching.

It is not a fact that a good scholar is *a priori* a good teacher. He may be, and often is. He may be a good teacher for graduate students, but a poor one for freshmen. He may be a poor teacher at any level. If he is a good teacher for freshmen it may be because he insists on *teaching* in spite of his training. Good teaching calls for that plus element which may or may not be present in a good scholar. If the plus elements are there they are often latent because no one has called attention to their need. How do we find out who will be a good teacher unless we try to discover these elements of good teaching before we pin the badge on the candidate? The typical letter of recommendation from the graduate schools runs somewhat as follows: "This young man is a fine scholar and shows great ability in research. I know nothing about his teaching ability but he has a good personality and should make a good teacher." In short, the college must gamble on the very quality it is most concerned with—good teaching. This is an unsatisfactory state of affairs!

We face a situation which calls for a new look at the graduate preparation of college teachers. Graduate schools have begun to recognize this, but only in recent years, and action lags far behind recognition. In a few centers some sort of action, designed to correct the imbalance, is going on.

There exists, of course, the natural fear—partly rationalization—that the preparation of college teachers might fall into the hands of professional educators and take on those unhappy elements so often deplored in the preparation of elementary and secondary school teachers. The unhappy situation exists on the one hand that techniques of teaching are overdone to the detriment of scholarship, and on the other that scholarship is emphasized to the virtual exclusion of an understanding of teaching. Many a college teacher will proudly defend his "purity," having never been "degraded" by courses in education, while the professional educator will counter by pointing out that this lack could account for much of the poor teaching that goes on at the college level today.

It is time that such recriminations came to an end. Whatever the situation may be in the preparation of secondary school teachers it is certainly time for the prospective college teacher to learn that his job today is far more than that of being a scholar. Knowledge of subject matter, however erudite, is insufficient. The college teacher's job is changing rapidly in a nation committed to a vast democratic experiment in higher education. But not until the faculties of the graduate schools themselves recognize this changing pattern with the need for teachers-beyond-scholars will we be able to staff our colleges with an adequate supply of teachers prepared to do effective teaching in the great American experiment.

This does not mean that we need to add a host of courses at the graduate level. Indeed, informal in-service orientation to good teaching would serve the purpose better. Most important is the need to provide a philosophy of teaching for the prospective college teacher accompanying constructive experience in responsible teaching under sympathetic guidance.

The question of whether the college teaching candidate should receive a different kind of graduate training from the research candidate has been argued endlessly, and this is no place to try to resolve the arguments. Suffice it to say that the teaching candidate needs something which the research candidate does not. He needs breadth, as well as depth; he needs to know that he will teach *students,* whatever the medium of subject matter may be; he needs to know that good teaching involves some understanding of independent research if he is to inspire his students toward similar independence of thought and action.

Although one can complain at the failure of the graduate schools to recognize their responsibilities in the preparation of college teachers, it must be said in their defense that they have regarded their major function as training scholars. In this they have performed outstanding service. At its best, graduate training which leads to independent research is a must for every prospective college teacher. But the so-called independent research of today too frequently partakes of the nature of busy work, of supplying data for the professor's pet projects, of classifying answers to questionnaires, of digging deeply into obscure corners, which for the prospective teacher are harmful as well as useless.

It is possible that we should not expect the graduate schools to do *both* of the necessary jobs in preparing a college teacher. The graduate professor is often neither qualified nor interested in helping to prepare his research students for the job of teaching. An intermediate phase (or a postphase) devoted to gaining an understanding of teaching is needed. This phase is being developed in several places in a number of experimental ways. Carefully supervised and coordinated practice teaching under an outstanding teacher (usually *not* the *major* research professor) is one partial way of achieving this end. Seminars in the philosophy and problems of teaching, with or without credit, are another. The use of young graduate students as preceptors is still another. It is a common observation of administrators that those who have had some experience teaching at the secondary level make the adjustment to college teaching more rapidly than those who have gone directly into college teaching following the attainment of the Ph.D. degree. This may be in part a matter of greater maturity, but it also has a significant relationship to successful experience.

The earlier the prospective teacher can have some constructive experience, or can be oriented toward teaching in some other way, the better. As he then pursues his advanced work toward the Ph.D. degree he will be observant of good teaching, and will begin to develop his own philosophy of teaching.

What is needed, then, is some better way of orienting graduate students toward teaching in their early graduate years and of bringing them into close contact with fine teaching. The absorption process might then operate successfully without the necessity of formal courses.

Certainly the graduate schools are not alone to blame for poor teaching in the colleges. The colleges themselves must assume much of the blame. Our present college teachers, and many of our administrators, are products of the inadequate system of graduate training. Until college administrators and department heads *insist* on getting candidates with some understanding of teaching they cannot expect much change in the attitude of the graduate schools. The undergraduate college has too often aped the graduate school. Undue emphasis is placed on research, scholarship, and the publication of papers as the way to promotion. The skillful and successful teacher too often must find his reward in self-satisfaction.

Departmentalization of the undergraduate college has also taken its toll. Necessary as it may be, it has tended to build little competing empires. The department seeks, as candidates for its staff, specialists to meet the ever-increasing complexity of its program in this age of specialization. Concerned with its own growth or survival, the department often has little interest in the *education* of the *student*. Its struggle is to maintain itself against all comers, especially newcomers. Its purpose is to teach history, or economics, or chemistry, and to get as many students as possible into its courses. Its interests are centered on subject matter, not on the needs of students, and it grows in strength by adding more specialized subject matter calling for more specialists. Specialized courses are added to keep the specialist happy; the student suffers through disjointed bits of specialization disguised as a major sequence. Once added, these specialties often become fixtures even though the specialist leaves the staff; his successor merely adds to the list. In order to hold students, departments force the institution to cling to outworn distribution requirements which will assure that students take their courses, even though the courses themselves are designed for specialization and have little relationship to the students' *needs*. Such, at its worst, is departmentalism. At its best it is the cooperative structure of devotion to scholarship that must form one of the two main pillars of higher education.

Departments are traditional. They were introduced to meet real needs; knowledge has accumulated, and has become diversified. They still meet real needs, but the needs have changed, while departments have tended to retain their traditional functions. We are no longer training only scholars in our liberal arts colleges. It cannot be expected that any considerable proportion of today's college-trained youth will become scholars in the traditional sense. Yet we seem to continue in our departments on the assumption that *all* the graduates will become scholars and continue with scholarly work. Whatever the percentage may be, from 20 to 60 in any given institution, the fact remains that, less than a fourth of all college graduates will continue in scholarly pursuits. How then do we adjust departmental work to meet these changes? Is it sensible to insist that, whatever their future goals, all students must take a fling at becoming scholars by completing a departmental major designed specifically for those few expecting to pursue scholarly work? Are the departments aware of this kind of problem, and willing to adjust to it?

Whether or not they are aware of the problems, the instinct toward self-preservation of the organism is a powerful one. The arguments *against* change also have some merit. Mastery of a field, whether it be used as a step toward advanced scholarship or not, is regarded as good discipline. The desirability of having some field of competence cannot be denied. To drop the requirement of a major sequence would be to let standards down. These arguments have a familiar historical ring; they are similar to those used to defend the study of the classical languages, but with important differences. They do not depend on transfer of training. Departmental programs can be made valuable both for the scholar and for the college-educated man of action. This requires considerable reorganization of objectives, greater social orientation, more attention to teaching techniques, and less specialization. It need not involve any lowering of standards.

What are the functions of the liberal arts today? Better phrased, the question might be, "What *should be* the functions of the liberal arts today?" Are they out of harmony with the times?

Unlike European educational systems, American higher education has never submitted to centralized control. It is the product of many influences and many experiments. The church-related colleges which have flourished so vigorously during America's growth have played an important role; so have the state universities and the land-grant colleges; so has the policy of bringing higher education into every sizable community through junior colleges, teachers' colleges, and community colleges.

Historically, there is the conflicting influence of English and German higher education, the one emphasizing cultural and liberal studies, the other directed toward specialization. It is little wonder that there have grown up in America many competing and conflicting philosophies of higher education. The closest we have come to uniformity has been in our considerable acceptance, with the introduction of American graduate schools, of the German philosophy of specialization of scholarship.

Prior to this period, however, a common philosophy did pervade the liberal arts. It was simple and compact. It called for study of the classics to provide culture and habits of mental discipline, and mathematics to provide training in problem solving, which skill could be transferred to other types of problems. This, oversimplified, was the basic philosophy which dominated the liberal arts for more than a century.

The vital break in the protective dike came when psychology, still in swaddling clothes, began to raise serious doubts about both mental discipline and transfer of training. If study of the classics did not provide mental discipline and solving problems in mathematics was not transferable, why should these subjects constitute the core of a liberal education?

The juxtaposition of this attack with the development of American graduate schools based on the German plan was sufficient to demolish the protective dike and let in the floodwaters. The classics were all but drowned, while mathematics was diverted toward the areas of practical and technical use. If mental discipline and transfer of training were unrealistic concepts, the alternatives were to introduce those subjects that were in themselves directly useful and that did not rely upon either transfer or mental discipline. Thus the way was cleared for substituting "practical" subjects and multiplying departments and courses as life became more complex. At the same time, we never abandoned our belief in either mental discipline or transfer of training.

The natural sciences rapidly evolved independence from their ancestral attachment to philosophy, to become practical and useful subjects. Indeed, the natural sciences gave early promise of providing new answers to the problem of transfer of training. The laboratory provided opportunity for problem solving and for learning the scientific techniques and methods of attacking problems. This hope was gradually dissipated, however, as laboratory work became more and more formalized, and courses in natural science became more specialized.

Thus natural science, offshoot of philosophy, has, under the impact of specialization and the spectacular advances in its applications, proliferated into many specialized departments, each with its dozens of subspecialized courses. There is little place in all this for the nonspecialist, and the programs of science in the liberal arts, as in the technical schools, have become purely a means of training specialists. The completeness of this surrender to practical necessity varies from school to school, but it leaves at best little trace of science as a liberal study. There is latent evidence of recognition of the need for recapturing some of the liberal aspects in science education and there is, as well, evidence of recognition of the need to make the preparation of scientists something more than technical training. Thus far, however, these are but straws in the breeze.

The social sciences, following the natural sciences but reaching maturity later, have developed similar patterns of proliferation. Being less applicable to direct training for vocations or professions they have, if anything, multiplied to an even greater extent in efforts to find a place of *practical* value in the educational scheme.

The humanities, oldest of the liberal arts, and from which the others sprang, have been forced into the conformity of diversification. They early lost the battle of the classics; foreign languages have been forced into the pattern of training courses; English has had to assume the job of basic training in grammar and speech; music has taken on a professional and practical atmosphere, as have the visual arts; and philosophy, with its lack of practical appeal, has virtually disappeared in many places.

The drive toward the practical and useful has all but erased the meaning of the term "liberal arts." Boundaries have become vague and diffuse; many courses and even whole departments included in the so-called liberal arts have no relationship to liberal studies. They are vocational training courses. This is not to say that there is anything wrong in vocational or professional training set in the proper context. It is only to say that there is a serious need to reassess the meaning and place of the liberal arts in modern times. They have become a heterogeneous collection of courses, many of which have a purely practical value and few of which are purely liberal. We have lost the core of unity of the early liberal arts, and due to a variety of impingements have found ourselves spread into unlike segments whose boundaries do not even come together and among which communication becomes impossible.

As best we can, under the circumstances, we have tried to draw the diverse segments together, even loosely, by such devices as distribution requirements. By spreading his work over several areas we at least assure that the student will have the variety of contacts of a supposedly educated person. In addition, he must pursue a concentration program to provide competence in some field. At best this may lead him into a liking and respect for scholarship, whether or not he ever intends to become a scholar. At worst it drags him through a meaningless routine in order that he may qualify for a degree. In the more practical fields he may find a connection between what he is doing in college and what he will do afterward. But many liberal arts students today seek the easiest way out, both because of the confusion and because of the lack of challenge. They flock to departments recognized as easy in order to get over the necessary hurdles to qualify for a degree. They have no real wish to become scholars; they find little in traditional departmental programs to meet their needs, and following natural human traits, they seek the path of least resistance.

For those who believe in the liberal arts this is a sad state of affairs, and any realistic defense must start from a recognition of their present serious weaknesses. There is much that can be said in defense. There is still a strong, if small, core of liberal studies remaining. There is an awakening of the need for redefinition, not in terms of *practical* values, but in terms of comprehension values. There is abroad the feeling that higher education has a social and a citizenship responsibility which can best be met through the liberal arts and there is a growing effort to reexamine, in modern terms, the concepts of mental discipline and teaching for thinking and understanding, through new approaches to subject matter and group relations.

With the rapidly growing college population and the shift of emphasis in the function of a college education there should be greater need than ever before for the liberal arts, adjusted to modern needs. Whatever the future may be, the trend today is definitely toward a four-year college education. This is rapidly becoming the basic criterion for acceptance into business and society. It may mean that training for professions and scholarship will eventually be advanced to the graduate level. It means even today that the college degree is no longer the exclusive badge of scholars; it is becoming a common denominator of American culture. It is not likely that we will reverse the present trend by making the junior college terminal for cultural and general studies, with the senior college reserved for more scholarly work, as has been proposed by Dr. Conant and others. It may well be, however, that there will grow up an even greater distinction between colleges that, on the one hand stress scholarship and professional studies, and on the other emphasize general cultural studies. This trend is not new in the college, and it has been even more marked on the secondary level.

Recognition of the weaknesses in the liberal arts has led to numerous experiments in reform. Among them, the most significant and widespread has been the introduction of what is now usually called General Education. By some this is considered a revolt against the liberal arts. There are others, particularly its opponents, who argue that it is nothing but the liberal arts in a less satisfactory form. There are elements of truth in both of these statements and the line between General Education and the liberal arts is not distinct. The attitude taken toward General Education is often a product of emotion and defense by those opposed, and emotion and offense by those in favor. As a newcomer it offers a threat to that which is older, and it frequently does less well some things which are already being well done.

It is more of an evolution than a revolution, but it does differ from the liberal arts of today in certain significant aspects. To that extent it is revolutionary. The three phases through which it has passed, with the third just emerging, illustrate both its evolutionary and revolutionary character. First, it represented largely an attempt to bring elements of the diverging disciplines back together at least at an elementary or introductory level. In the beginning, and for this purpose, the survey course which combined the highlights of several disciplines was developed. The student, without taking the separate introductory courses in each—astronomy, chemistry, physics, and geology—learned something about each field through a combination of selected portions. Similarly in the social sciences, the humanities, the biological sciences, and the arts, survey courses provided a cultural and informational smattering. Such courses were also designed to whet the appetite for more work in the field, and to guide the student in making a more intelligent choice of a field for further work.

The term "survey" has fallen out of favor and few would admit to teaching such a course. Yet survey courses exist in considerable number, and they have some virtue in spite of their weaknesses. They do give the student some unified pictures of broad areas, some place to start from if he has, or develops, specific interests. They do remove blind spots and assure some contact with otherwise neglected areas. Their weaknesses are obvious. They tend to be superficial, to race over material like a Cook's tour, to be information centered, and to offer little challenge beyond that of learning significant laws or generalizations.

World War II, with the necessary hiatus in cultural studies and the equally necessary emphasis on the technical, carried its own seeds of educational revolt. In General Education, for those already started, this took the form of careful reexamination of the effectiveness of the survey courses; for others not yet started in General Education, it provided the opportunity to start at a more advanced level. Considerable impetus was given to the whole movement by such documents as the Harvard Report, *General Education in a Free Society*, by the work of such leaders as Dr. Earl McGrath and the publication of a series of volumes on General Education under his editorship, and by a number of other documents—both published and unpublished—representing the efforts of institutional committees to deal with their own curricular problems.

Not only did many institutions begin new programs in this period but others, already started, reorientated their programs. Unsatisfactory experience with survey courses in general prompted the shift toward ones that were more selective in content, courses that Dr. Eric Rogers labels so aptly "block-gap courses." In some cases a unifying theme was attempted; in others it was largely a matter of omitting much of the material formerly taught, digging deeper into what was retained, and providing some reorientation. In the natural sciences great impetus to the movement was given by the leadership of Dr. James B. Conant, who not only introduced and taught a course at Harvard using cases in science but who, with Messrs. Hugh Taylor of Princeton and the writer, initiated several conferences to give such problems wider attention and enlist the support of teachers of science.

A third phase of General Education appears to be evolving out of the second. This might well be termed the student-centered phase, in contrast with the first which was largely subject-centered and the second, which was transitional. In it are involved aspects of mental discipline and transfer of training which may well mark a return to these old concepts under a new guise. In it also are more significant aspects of the commonality of General Education as well as its individualization. It is the most heartening step yet taken, and the most dangerous. It will necessitate far more than has yet been done to evaluate results. Even more significant, it involves teaching approaches and techniques with which we have had too little experience yet in American colleges. Unless we can come to grips rapidly with these problems, General Education in this newer form can have little future. But if we can come to grips with them, and solve them, it may have a great future. Indeed, it can lead the liberal arts out of the morass in which they are now submerged.

Liberal arts departmental courses are subject centered. They have always been so, but they have become more so by the nature of recent forces of specialization. The content of each discipline is continually increasing, necessitating more courses, greater subdivision, and greater segregation from other disciplines. Because they are designed chiefly as parts of major sequences in a special field, and because each must prepare the student suitably for the next advance, they are plagued by the problem of subject-matter coverage. Whatever happens, certain material must be covered in each course so that there will be no gaps in the student's preparation for the next course. Indeed, so immersed does the student become in detail that he seldom finds any unity in his program, and rarely gets the opportunity to overview the field. If he makes any kind of over-all synthesis, it is in spite of his courses and not through them; we are so busy filling him with essential details up to the last that we lose sight of unity. This failure we rationalize by saying it is the student's job to make the synthesis.

Whatever its present weaknesses may be, General Education has at this point a great initial advantage over the departmental liberal arts. *What* is covered is of much less importance than *how* it is presented. We can pick and choose at will, and more important, we can *eliminate* at will. There need be no dictation of coverage, and we are not greatly concerned about gaps. In short, we can take the time needed to provide a real *understanding* of the kinetic theory, or Gresham's law, or Hamlet. We can dig deeply where it is desirable and tread lightly where we wish. If we so direct our efforts, we can provide progressive depth of understanding of concepts, which departmental courses rarely have time to do. Instead of learning many generalizations without understanding the supporting evidence, the student may learn only a few but with a mature understanding of how they came into being.

General Education, then, differs from the departmental liberal arts in placing the emphasis upon the student and his grasp, and in dealing with materials in such a way that these present themselves as problems confronting the student himself. It does not stress disciplines as such, and while it is involved with subject matter, it uses the subject matter to create responsive and understanding learning reactions by the students: to develop a deeper sense of concepts, and provide for thinking *about* the problems the material creates.

At this point some will argue that there is no such distinction between General Education and the liberal arts, that both should, and do, have the same objectives, and the same approaches. If so, well and good, we are on our way out of the morass. To the extent that it is true there may be no further need for General Education. But unfortunately, it is true only in the exceptions, and the exceptions are not many. The distinction varies, naturally, with disciplines and even with courses, but in the main the outcomes and objectives typical of General Education can, at best, be only incidental in departmental courses where the emphasis is quantitatively on coverage.

Briefly, in General Education courses we bend subject matter to the needs of the student; in departmental courses we bend the student to the needs of the subject matter. The difference can be as cleancut as that.

Dr. Harold Taylor in his excellent chapter, "The Philosophical Foundations of General Education,"[1] classifies General Education under three philosophical outlooks: rationalism, neohumanism, and instrumentalism. These are rough classifications and they overlap. But they provide useful terms for distinguishing various parts of the continuum of General Education. The first of these outlooks differs from the second largely in its adherence to the principle that there is a system of absolute truth which can best be sought through the great books of the past. It seeks to provide through perception and understanding of the past the ability to contemplate, reflect, analyze, and manipulate ideas as the highest of human achievement. It is not concerned with contemporary problems as such, but assumes that the student will make the application to such problems.

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[1] Nelson B. Henry (ed.), *Fifty First Yearbook,* Part I, The National Society for the Study of Education, 1952.

The neohumanists, like the rationalists, accept the idea that "there are proper subjects for training the mind but that there is no specific philosophical system which supports the program they recommend. Instead, there is an acceptance of the idea that, in order to avoid vocationalism and the use of knowledge for particular ends, it is necessary to include in the program of General Education those subjects which can be distinguished from other subjects by the fact that they have no immediate, direct, or specific vocational values."[2] Under this philosophy it is assumed that an important purpose of General Education is to provide a common cultural background. The development of a sense of values and of clearer thinking are not specific objectives but should, as in the case of the rationalists, be desired outcomes attainable from the studies pursued. The instrumentalist philosophy starts with the student and works outward through "inquiry and active search." The individual develops his "own pattern of behavior, emotional, intellectual, physical, all at once and begins to make for itself its own life. Then follows the basic moral assumption that within each individual there exists a potential for growth toward cooperative ways of living, thinking, and acting and that these ways produce a richer and more satisfying life for the individual and his society than others reached by other methods . . . In operation, an educational system of this kind places its emphasis upon the individual student and the quality of his experience and tries to arrange an educational environment in which it is possible for the individual to find his own way toward full development."[3]

The great strength of the rationalist approach lies in its discipline through the use of absolute standards. The weakness of the instrumentalist approach is in the absence of comparative standards. Yet this is also its strength. The objectives of the rationalist approach cannot be achieved across the board in a great democratic experiment in education. They can be attained only for the intellectual elite. The instrumentalist approach can be achieved at various levels and in many ways. This is the principal reason for its popularity.

General Education today is moving toward instrumentalism and

[2] *Ibid.*, pp. 30-31.
[3] *Ibid.*, p. 37.

away from rationalism. But instrumentalism in its lowest form leads to confusion and indecision. It needs to be strengthened by borrowing something from rationalism; it needs the discipline rationalism can provide. It is not enough that the individual be given the opportunity to find his own way. We should be able to help him develop some useful techniques, to build a compass which will provide general direction.

Psychologists have never said that transfer of training is impossible; they have said that it becomes more probable the greater the similarity of the elements and the greater the emphasis placed on the mechanism of transfer. This is what General Education under the instrumentalist approach should be able to do. It is the factor needed to give it direction and strength. Without it much of our present General Education becomes meaningless, for the student is merely left to flounder in situations which have no beginning and no end.

The discipline that is needed, then, to make the instrumentalist approach meaningful calls for placing emphasis on the *ways* of dealing with problems, on *analysis* of situations, on group reactions, on the elements involved in successful and unsuccessful ways of reaching conclusions. If this sounds like the description of a course in "How to Think" the point has not been properly made. We do not learn how to think without thinking about something important. But we can get a lot of useful practice and experience through facing problems which have elements similar to those of life and which build up from the more simple to the more complex understanding of major concepts. General Education, properly developed and *understandingly taught,* is in a unique position to make this kind of a synthesis of matter and method. It has a free hand in the selection of subject matter most useful for this purpose, and the time to deal with the subject matter inductively.

This type of disciplined instrumentalism is emerging in many experimental programs today. Without such discipline General Education can continue to provide some common ground and assure some breadth but it is not likely to have any serious effect on the traditional liberal arts. At best it will provide merely an addendum to an already overextended liberal arts program.

Taken seriously, however, disciplined instrumentalism can have a profound effect on the liberal arts as on all of higher education. It calls for great skill in teaching, a new kind of skill which few college teachers, because of the nature of their training, possess. It is a gamble. It will result in many headaches, heartaches, and failures on the part of the teacher until we have learned more about the processes we are dealing with. It calls for experimentation not for just a year, or two years, or three, but over decades. It is popular in some quarters today to argue that General Education has had its day and has failed, so let this pass into the void, and let us return in peace to former ways. Under whatever name it may be called in the future, General Education will never pass, for there is too much need for experimentation in the ways of effective teaching. The speed with which we can make the adjustment is important. We have too few teachers ready and trained for the task. It is largely an in-service job in which the ready few must provide the inspiration and win the disciples. Extension to preparation on the graduate level will come only when proof of success is apparent.

Instrumentalism has little to say about culture. It may or may not be the task of General Education of the future to deal with culture *a priori*. No one with neohumanist leanings is happy about this seeming omission in the instrumentalist approach. But here, again, something of a synthesis is possible; indeed as the situation exists today the two approaches move ahead side by side in many places. It is not clear yet whether neohumanism will become a part of General Education or whether it will be the spearhead of reform in the liberal arts. The battle is now being fought vigorously over this ground. It is here that the conflict is the sharpest, and where General Education represents a real revolt against departmentalized liberal arts. Who wins is of no importance; what is done to resolve the conflict is of vast importance. It can be resolved by departments willing to assume the responsibility, by the selection of teachers who can do the necessary job; by interdepartmental cooperation, or by General Education, separately organized. The important point is that it *must* be done by somebody in order that it be not lost.

Instrumentalism involves problems and ways of dealing with them. However, unless these smaller problems build up into larger concepts, we are in danger of leaving the student *inside* his single circle with little understanding of how such problems look when they make up part of a significant concept. Dr. Alvin Eurich has recently pointed out that "in discussing the ideas within subject-matter framework as we do at present we tend repeatedly to reiterate the elementary concepts without fully developing the complexity of the idea." He suggests that liberal education be made to deal more directly with great ideas rather than with fragmentary subject matter; he lists such ideas as: liberty, justice, evolution, democracy, relativity, truth, induction, dignity.

Certainly this is germane to General Education. Indeed in the disciplined Instrumentalist approach it can be the direction finder. Great ideas in their complexity depend in the first instance upon understanding the smaller problems upon which the ideas are built. In our departmental science courses, for instance, we deal with the steps of induction formally and briefly. Then, because time is too short, we fail to use them or even to point their application. In fact, we have little time to do other than attempt to teach the most recent conclusions of science without being able to develop the evidence on which they are based. Freed from such restrictions, however, in a General Education course we can build a science program out of selected problems which will provide a rich and full understanding of induction. Not only this, but, hopefully, the process will become a part of the student's apparatus for dealing with other problems. Thus he acquires not a mere abstract understanding of a great concept, but a useful one as well in terms of his own conduct. Such a course requires skillful teaching of a type not common in departmental courses.

General Education today is developing as an instrumentalist program. It needs both discipline and direction. These can be provided only through a type of teaching in which the teacher resigns as an authoritarian and reenters the classroom as one of the learners, albeit, the chief learner. He must learn how to probe and stimulate, how to encourage self-analysis by the students around him, how to discourage reliance on authority and promote expression even if it be to him only the trivia of a growing mind.

Success or failure in General Education depends upon the teacher to a far greater extent than in departmental courses. Success in General Education will inevitably react upon the departmental liberal arts to make of them sharper instruments for future education in American citizenship. Far from being dead, the liberal arts—and General Education is certainly one—face a rebirth of usefulness and freedom in the great American experiment in higher education through an increased accent on teaching—an accent which places the mark of distinction upon the effort to convert learning into thinking.

Part One

A PLACE FOR DISCUSSION

Accessioned No. 508

NO 508

B. S. BLOOM

CHAPTER I. *THE THOUGHT PROCESS OF STUDENTS IN DISCUSSION*

DURING the past four years we have attempted to understand the ways in which learning situations influence the thinking students do in class. We started this research because of the problems we glimpsed in a study of the overt activities of students in class. As so many others have done, we began by observing discussion classes and making recordings of them. We were embarrassed by the amount of material contained in a single discussion and, of course, were overwhelmed by the sheer number of words. We then proceeded to reduce these data by means of a great variety of *ad hoc* classifications. This proved not only useful but it also improved our understanding of discussion. In fact, we prepared a pamphlet on how discussion classes should be organized.[1]

Each instructor concerned found this study of the collected material stimulating. Especially valuable were the recordings of the entire discussion classes, since they gave accurate reproductions of what had overtly occurred during them. Instructors were astonished to find that they had done most of the talking, and resolved to decrease the amount in the future. Each was asked to note points in the discussion where he had not taken advantage of contributions by the students or where he had been misled by an irrelevant or erroneous statement by a student.

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[1] *Teaching by Discussion in the College Program.* Report of a study made by five members of the faculty of the College of the University of Chicago, 1947-1948. (Out of print.)

In most cases the instructor was helped to see his real relations to the movement of the discussion process in contrast to his idea of what should have occurred. When a simple count was made of the number of words spoken by the instructor, we found figures which added up to more than 50 per cent of the total. Since our classes had about 25 students, this meant that the average student had only about one minute to speak. Typically, only a third of the students spoke, so these had about three minutes on the average in which to communicate their ideas.

Although only a limited amount of time is available for each student to speak during a typical discussion class, it would be a mistake to regard those students not speaking as doing nothing of importance. As lecturers, we live in hope that our students are stimulated to active learning by what we have to say. In discussion classes we have hopes that learning will take place as the result not only of the student's own overt participation in the exchange of ideas, but also as a result of his observing other students and the instructor in active communication about ideas. If this is so, the thoughts students have during a discussion or lecture class should assume a high degree of importance for an inquiry into the learning process. An individual may deliberately hide or mask his thoughts before giving verbal expression to them in order to protect his own security or to protect others. He may withhold expression of some thoughts because he regards them as irrelevant, immaterial, or false. He may not be sure of the adequacy of his thoughts, or he has difficulty in expressing and communicating them to the group. The condition under which the group is established and organized largely determines the thoughts the individual is free to verbalize as well as those which he must keep hidden.

Although the classroom situation may physically imprison an individual, his thoughts may release him from the immediate environment, leaving him free to occupy himself with features quite irrelevant to the purposes of the class. The only controls over these thoughts are those imposed by the individual himself, those determined by the lures and stresses of the environment, and those determined by his unconscious processes.

In our efforts to investigate the nature of these thoughts in classroom situations, we have been using a method of reviving memories after the class in order to recall the thoughts which occurred during it. This method of *stimulated recall*[2] has been used in a number of investigations and has proved promising. The basic idea underlying the *method of stimulated recall* is that a subject may be enabled to relive an original situation with great vividness and accuracy if he is presented with a large number of the cues or stimuli which occurred during the original situation. The familiar illustration of this is the attempt to recall a memorable event such as one's twelfth birthday (at age thirty-five). Little recall is present until one is reminded of such cues as: this was the birthday when I received a large red bicycle; it was the day when Aunt Emma came to visit; it was the day when the neighbor's barn burned down; etc. With cues such as these, a great many associations will return, many with great vividness. Since the individual is a participant in an event at one time and is a subject reporting his conscious thought participation after the event, this type of investigation can be carried on in such a way as to have only minimal effect on the nature of the original situation.

In our studies we have made sound recordings during the entire class period and then played these back to the students within a brief period of time, usually forty-eight hours. If we make the major assumption that the cues enable a person to recall a total situation which is composed of both overt activities as well as of conscious thoughts, we have one means by which to infer the accuracy of the recall. Thus we have made a number of studies[3] in which the recording is played back to students and they are asked to tell what overt events (i.e., activities, specific talk, or particular gestures and mannerisms) follow immediately after a particular point in the recording. We have found as high as 95 per cent accurate recall of such overt, checkable events within two days. Such recall obeys the usual memory curve decline, and over a period of two weeks the accuracy of recall drops to about 65 per cent. Other studies[4] have been made to determine the accuracy of the individual's recall of activities which occurred simultaneously with particular sound cues, and the results have been about the same. Making the inference that the recall of one's own private, conscious thoughts approximates the recall of the overt, observable events, has led to the anticipation that the accuracy of the recall of conscious thoughts is high enough for most studies of learning situations, if the interviews are made within a short time after the event. Other evidence on the validity of the recall supports these inferences.

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[2] B. S. Bloom, "Some Results of a Study of Conscious Thought Processes in Classroom Situations," paper presented at American Psychological Association Meeting in Chicago, Illinois, August 31, 1951; "The Study of Conscious Thought Processes by the Method of Stimulated Recall," unpublished paper.

[3] E. L. Gaier, "A Study of Memory under Conditions of Stimulated Recall," paper read at the meeting of the American Psychological Association, State College, Pennsylvania, September 5, 1950.

COLLECTION AND TREATMENT OF DATA

In the studies conducted so far using the method of stimulated recall, a series of critical points in the class or educational situation were chosen, and at each of these points the recording was stopped and the individual subject asked to report his thoughts as they were in the original situation at that point. We have not yet identified clear criteria for choosing critical points. These, however, are usually the points in the class where a major problem was posed or solved, where the discussion shifted from one topic or development to another, or the point where an important contribution to the discussion was made or a relatively great amount of emotion was displayed. Other critical points might have been equally good for purpose of study. We have tried to insure that there are a sufficient number of cues between critical points to provide a framework for the stimulation of recall. Usually we have spaced the critical points two or three minutes apart in order to insure adequate recall.

The reports or protocols on conscious mental processes result in a tremendous amount of data which is difficult to summarize and analyze by the methods commonly used with overt behavioral data. Although we have not as yet adequate techniques for summarizing, classifying, and analyzing the data, a relatively crude classification scheme has proved to be revealing and useful. Our first stop in the reports is to break them down into thought units. A thought unit includes that portion of the report which is centered on a single idea, activity, or thought. These are relatively easy to determine, and two independent workers have reached agreement on the division of reports into thought units about 98 per cent of the time.

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[4] Stella Beil Schulz, "A Study of Relationships between Overt Verbal Behavior in the Classroom and Conscious Mental Processes of the Students," unpublished Ph.D. dissertation, University of Chicago, 1951.

Each thought unit is then classified on a number of different bases, depending upon the use to be made of the data and the hypotheses which are to be investigated. In our studies of lectures and discussions we have made most extensive use of two methods of classifying the thought units. The first method is to determine the object of thought. Is the student thinking about the *idea under consideration* in the class or about a *related idea*? Is he thinking about the classroom situation or process? Is he thinking about *himself*, the *instructor*, or about *another student in the class*? Is the student thinking about some *object within sight or hearing* or about some *person or concrete object or situation not in the immediate environment*? Where a thought unit could be classified under more than one category, we have attempted to determine from the context the one which appears to be the more central or emphasized. If the choice is between a category which is relevant to the educational activity in the class and one which is not, we have systematically erred in placing the thought in the category regarded as the more relevant.

We have also constructed and used an elaborate and detailed classification of the character or nature of the thought. For this classification we have used major categories as well as subdivisions or subcategories. Our first set of major categories are those which are representative of active participation in the activities of the class. Such major categories as *problem solving, evaluation,* and *comprehension,* especially when further detailed and subdivided, appear to summarize these well. Another category is provided for *passive participation* in which the student is doing little more than passively following the overt activity in the class. Diversions from the overt activities of the class are those which center on the *self* or on *other individuals* and their personal characteristics. Still other diversions in thinking are those centered on particular *words and phrases* which are thought about independently of the context in which they appeared, particular feelings of *confusion* or *boredom,* and a great many *miscellaneous thoughts.*

Considerable variation in the kinds of thoughts is reported from student to student and from class to class. The student's ability, interest, personality, and the conduct of the particular class influence the variation from student to student. The temperament and skill of the instructor, the nature of the subject matter, and the nature of the student group are all important factors in determining the variation from class to class. However, we have found a good deal of consistency in the thinking of particular students when we interviewed them in connection with more than one class. In a study involving fifty-two students interviewed in more than one class, we found a correlation of +0.58 between the amount of relevant thinking evident in the thoughts reported in two different classes. In a study involving eighteen classes, we found a correlation of +0.53 between the amount of relevant thinking reported by the group of students in two different sessions of the same class. These findings on consistency of thinking give us confidence that useful generalizations about a student or a class can be made on the basis of a relatively small sample of interviews. This consistency for students and for classes appears to demonstrate that the thoughts reported are to be accounted for by particular factors rather than by the result of mere chance variation and accidental characteristics either in the student or in the class.

We are assuming there are significant differences between the conscious thoughts of students and their overt participation in a discussion class. Otherwise, if one could infer the covert (private) or conscious thoughts from the overt, verbal participation, there would be little point to try to study the covert thoughts as directly as we are attempting to do here. The difficulties and the time expense involved in a study of the conscious thoughts are so great as to justify this type of research only if it is evident that they are different in character and kind from the more easily observed overt behaviors of students.

During the past year we attempted to secure evidence on this point as well as on the relationship between observations of overt and covert behavior in class and later achievement on examinations covering the subject matter of the entire courses under consideration. A group of students (45) was interviewed two or more times during the year to determine the nature of the thoughts they experienced during discussion classes. These thoughts were summarized to secure an index of the proportion of thoughts reported which were relevant to the topics under consideration in the discussion classes. These same students were rated by the instructors on the extent of participation in class as well as the quality of participation in class.

E. Extent of Class Participation

4 Very active. Involved in most discussions.
3 Participates about an average amount. Volunteers when he is especially interested in the topic or point.
2 Seldom participates. Usually has to be called upon to get him to speak.
1 Participates very rarely and only after considerable prodding.

F. Quality of Participation in Class

4 Is chiefly a contributor of ideas to the discussion. Usually the ideas are sound and represent distinct contributions.
3 Is chiefly a critic and evaluator. He assumes the function of testing the ideas of others and frequently is able to point out what is wrong with someone else's contribution.
2 His contributions are limited to quotations from the text or to mere agreement or dissent. Not able to add much to the discussion.
1 His contributions are usually irrelevant, misleading, or wrong. He does much to confuse the discussions.

At the end of the academic year each student took three or four of the comprehensive examinations developed by the Board of Examinations of the University of Chicago. These are objective examinations which are graded without a knowledge of the identity and characteristics of the individual student. Recognition-form questions are graded by clerical workers or machines, while essay questions are graded independently by two or more competent readers. These examinations (which are usually six hours or more in length) are reliable, and each contains an extensive sample of the types of problems and tasks which characterize the objectives of the course as well as its subject matter.

The index of relevant thinking is correlated +0.61 with comprehensive grade average. This correlation is sufficiently high to demonstrate that the conscious thoughts which occur in the discussions have a significant effect on achievement. This relationship also gives us confidence in the meaningfulness of this type of evidence for an understanding of the educational process.

The indices based on overt participation in the discussion classes are also highly related to the learning outcomes represented on the comprehensive examinations. The *extent of class participation* correlated to the extent of +0.57 with grade averages on the comprehensives, while the *quality of class participation* correlates to the extent of +0.67 with grade averages. Thus we have two types of indices of participation in class, both of which are highly correlated with grade averages:

Covert participation—relevant thinking as determined by stimulated recall.

Overt participation—extent and quality of class participation as determined by judgments of two or more instructors who had observed the student in discussion classes for an academic year.

Relevant thinking or covert participation of the student in the discussion process is not easily recognized by the instructors. The *extent of class participation* (overt) correlates −0.06 with the index of relevant thinking (covert), while the rating on the *quality of class participation* (overt) correlates only to the extent of +0.12 with the index of amount of relevant thinking.[5]

These two types of participation are evidently independent of each other, and one cannot be adequately predicted from the other. Since the *quality of class participation* and the index of amount of relevant thinking are most highly correlated with grade average and with each other, we computed the multiple correlation between grade averages and the combination of the two. This multiple correlation is +0.86, which is an unusually high multiple correlation in educational research when only two variables and a criterion are involved.

From these few data, we derive a number of major generalizations:

1. Students may participate in learning situations either overtly or covertly.

2. A student's achievement is related to his participation in class whether that participation be overt or covert, or both.

3. Instructors who are relatively good judges of overt behavior are unable to make judgments about covert behavior.

This third point is of great significance for psychology in general and learning (educational psychology) in particular. If relevant behavior may take place at both a covert and overt level, and if one cannot be judged from the other (although both are directly related to other learning outcomes), it is clear that we must find methods for taking both into consideration. As a research problem in psychology, we must recognize that here are two independent levels of particiption which must be tapped if we are to understand individual behavior and the influence of particular situations in affecting such behavior. There can be no true behavioral science which takes into consideration only a single level of individual behavior. As a research problem in learning, we must find ways of determining and describing the variables of learning at both levels of participation, and perhaps the unconscious level of behavior must also be more fully considered. Finally, in setting up learning situations we cannot confine our attention to overt behavior or participation only.

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[5] The combination of *extent* and *quality of class participation* correlates +0.09 with the index of relevant thinking.

Having demonstrated (at least to our own satisfaction) the meaningfulness of the concept of covert participation in class discussions, its relationship to learning achievement, and its independence of present evidence on overt participation in class discussions, we are faced with a major dilemma. Granting that covert participation (relevant thinking) is important, what can an instructor do if he cannot determine or predict its taking place? At this point we have little to offer an instructor which he can directly apply to an individual and specific situation. We recognize the uniqueness of each situation, that a multiplicity of relatively subtle factors may be involved.

While the instructor may not be able to predict the thinking students do in class, it is evident from Schulz's[6] study that there are significant relations between the overt activity and the kinds of thinking done by students in the classroom. A direct question was usually accompanied by a student's attempt to think about an answer, while reports and statements (especially by students) resulted in a considerable variation in the thought processes, with passive types of thinking predominating. In general, Schulz found that most of the thoughts reported by students could be traced directly to stimuli in the classroom environment, with the verbal activity of the teacher and the students the dominant factors. This suggests the tremendous influence the immediate situation has on the conscious thinking people do and the great potential for changing and helping people as the result of an appropriate structuring of activities in education, social, or therapeutic group situations.

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[6] *op. cit.*

Perhaps one of the most obvious factors in determining the kind of thinking students do is the nature of the instructional methods used. Although our primary concern is about the discussion method, the study of the thinking students do in lectures, as contrasted with the thinking they do in discussion classes,[7] serves to give us greater insight into the nature and effect of the discussion method of instruction. In one study, five lecture classes and twenty-nine discussion classes were investigated. Although this is a small sample of lectures, the general uniformity of the conscious thought data for these lectures indicates that there is some generality in the kind of thinking characterizing lectures.

The clearest observable difference between the lecture and the discussion is the number of persons who have an opportunity to talk. In the lecture, only the lecturer speaks. An occasional lecturer may permit questions to come from the floor, but this can be little more than a gesture where the lecture audience is large. In a discussion class, presumably all members of the group, students as well as instructor, have an opportunity to talk.

What is the situation when the lecturer has the floor? The spotlight is on him: his manners, gestures, facial expressions, idiosyncrasies would be accented. This, one would naturally expect.

Yet we found that the students' thoughts about such personal characteristics of the teacher averaged about the same (less than 4 per cent) whether he played the role of lecturer or discussion leader. A possible explanation for this low value seems logical when one considers that in the lecture room, with its approximate number of 150 students, often the lecturer must resort to a public address system in order to be heard. Usually he is, therefore, rooted to one spot. Thus rooted, he must use all his efforts to speak audibly and clearly, giving little attention to bodily activity (though a relatively few lecturers do exhibit considerable idiosyncratic behavior which may attract attention to it *per se*). Students soon get used to any mannerisms the discussion leader may have, since they meet with him on the average of three or four times a week. During these frequent gatherings, his personal characteristics fade out from their conscious thoughts.

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[7] B. S. Bloom, "Thought Processes in Lectures and Discussions," *J. General Educ.*, vol. 7, no. 3 (April 1953), pp. 160-169.

In the lecture classroom the students become the background; as the lecturer is in the spotlight, they remain quietly in their seats—an audience. Compared with such an orderly setup, the discussion class is a chaotic affair. There is considerable physical activity (with both students and instructor), referring to notes or a book, raising hands, commenting to a neighbor, or discussing the topic in hand. As a result, each person in the room may be in the spotlight at one time or another, holding the stage for the time being.

This spotlighting of students in discussion as a result of their speech, gestures, or facial expression is clearly reflected in the conscious thoughts reported by the other students (see Table I-1). Eight per cent of the thoughts reported in discussion center on observations of students who are speaking. The proportion of thoughts in lectures and discussions about persons other than the student speaker

TABLE I-1. THOUGHTS ABOUT OTHER PERSONS AND THE SELF REPORTED IN LECTURES AND DISCUSSIONS

Thoughts about other persons	Lecture *per cent*	Discussion *per cent*	Significance of difference
Thoughts about the student speaking	0.0	7.9	[a]
Thoughts about the instructor	3.2	3.8	[b]
Thoughts about other persons	4.8	3.1	[b]
All thoughts about other persons	8.0	14.7	[a]
Thoughts about the self			
Thoughts about the self expressive of adequacy or inadequacy with respect to the topic and/or other students	1.6	7.5	[a]
Thoughts about the self which are unrelated to the classroom situation	3.4	4.3	[b]
All thoughts about the self	5.0	11.6	[a]

[a] Statistically significant at 1% level.

[b] Not statistically significant.

or the instructor is not significantly different (5 per cent as compared with 3 per cent). Thus the added visibility resulting from overt participation by students in the discussion results in a sizable proportion of the thoughts being centered on the personal characteristics of these speakers. Each speaker has a chance to share the scene.

Note what a different role the student plays in the lecture setup from what he does in the discussion class. An anonymous member of a large audience in the lecture, he is not likely to become conspicuous. He has a choice: he may attend to the lecture or not, taking or not taking notes. So long as he wears a mask of attention during the lecture, no one will threaten him. In contrast, as a well-known member of a small group, in the discussion class, he is constantly threatened. Perhaps he will be asked a question; in any event each fellow student's performance is threatening as competition. To assume a passive role would require an individual unmoved by the social pressures of an adult and his contemporaries; this is not the case with most college students.

This lack of pressure on the individual in the lecture is clearly reflected in the thought processes of the students. The thoughts about the self (reported by them in lecture classes) is only one-half of those reported in discussion (see Table I-1). Further classification reveals the greatest difference for those thoughts expressive of feelings of adequacy or inadequacy concerning subject matter or performance of other students. These total 7 per cent compared with less than 2 per cent for such thoughts during the lecture. The lecture, freeing the student of pressure, furnishes a climate more favorable to flight than does the discussion (see Table I-2). Such flight shows up as thoughts about persons, objects, and situations outside the classroom. These thoughts register 12 per cent for lecture versus 7 per cent for discussion.

Passivity (a minimal level of attentiveness) permeates the lecture room to a greater extent than the discussion. Classified as passive are those thoughts in which the individual is just following or listening or in which he is doing little more than keeping ideas in mind. These are the thoughts in which the individual is little more than a recording instrument, that is, he is doing a minimal of active thinking about the ideas other than to passively note what is being said. Fourteen per cent of the thoughts in lectures are of this kind, as contrasted with 12 per cent in discussions.

Another symptom of passivity in thinking is seen in the tangential thoughts about words and phrases. Dramatic or unusual phrases and words frequently lead to amusement, annoyance, or tangential thoughts about them. These are stray thoughts in that they are about the words and phrases taken out of context rather than about the significance of these words and phrases within the context of the lecture or discussion. While it is likely that these expressions would occur in both discussions and lectures, the constant pressure in the discussion for meaning and significance and the constant challenge to the student may explain why only 8 per cent of thoughts in discussions are of this type as contrasted with 19 per cent in lectures.

TABLE I-2. THE NATURE AND RELEVANCE OF THOUGHTS TO THE SUBJECT BEING CONSIDERED IN LECTURES AND DISCUSSIONS

Irrelevant thoughts	Lecture *per cent*	Discussion *per cent*	Significance of difference
Thoughts about persons, objects, and events not in the classroom environment	12.2	7.0	[a]
Tangential thoughts about words and phrases used in the lecture or discussion	18.8	7.5	[b]
Relevant thoughts			
Passive thoughts about the subject	14.4	11.7	[c]
Thoughts evidencing simple comprehension of the subject	22.4	8.6	[b]
Thoughts involving attempts to apply and utilize the subject matter	7.6	6.2	[a]
Thoughts involving attempts to find solutions to problems and synthesize the subject	1.0	8.3	[b]
Thoughts involving evaluation of the meaningfulness and accuracy of the lecture or discussion	18.2	20.5	[c]

[a] Statistically significant at 1% level.

[b] Statistically significant at 5% level.

[c] Not statistically significant.

The lecture moves along at the pace set by the lecturer. Since this pace is usually relatively rapid, it is reasonable to expect that students would spend considerable time in following the lecture or in trying to comprehend it. Comprehension, as we have classified it, includes those thoughts in which the individual is recalling previous related experiences, finding illustrations relevant to the material under consideration, or experiencing feelings of insight and understanding. Twenty-two per cent of the thoughts in lectures are classified under comprehension as compared with only 9 per cent in discussions. If we include the passive thoughts referred to above, 37 per cent of the thoughts in lectures represent little more than following the lecture or trying to comprehend it as compared with 20 per cent for such thoughts in discussions.

The above suggests several possibilities. The lecture moves so rapidly that the individual who is attending to it must occupy himself either with noting what is taking place or in trying to find something in his own experiences which makes it more meaningful. That is, the members of the lecture audience must occupy themselves in communicating with the lecturer and can do this relatively efficiently by attempting to translate what the lecturer has said into their own ideas and experiences. In contrast, the discussion moves by fits and starts, and the student who merely notes what is being said is not getting much out of it since much of what is said is erroneous or incomplete. Since the student's contemporaries are speaking a good deal of the time, the student may find little need to translate their ideas into his own experiences. His fellow students already share a great deal with him, and their ideas are likely to be put forth in terms he can readily comprehend.

Another possible explanation for the difference is that the lecture is predominantly a presentation of information or knowledge which the student is expected to record and comprehend, while the discussion typically centers on the attack on problems. In such attacks the major task for the student is to find relationships between what is said and the problem which has been posed. It is thus not the following or comprehending which is important, but the evaluating, finding answers or solutions, and synthesizing which are significant in the discussions.

This hypothesis is in part supported by the data on thoughts we have classified as problem solving. Those thoughts in which the student *applies the ideas* being considered are approximately the same for the discussions and lectures (8 per cent versus 6 per cent). But the thoughts in which the student attempts to answer a question or to work out a problem raised, to synthesize and to integrate the ideas presented (by relating a specific to some abstraction), to reconcile conflicting points, or to relate the ideas to the general problem are 1 per cent in the lecture as compared with 8 per cent in the discussion. While the average (8 per cent) for this most complex type of problem solving represents a relatively small proportion of the thoughts reported, all the discussions, with one exception, involve more of this type of thinking than any of the lectures.

If we classify the thoughts as to relevance to the topic under consideration, the lecture is superior to the discussion in that 64 per cent of the thoughts reported by students in lectures are about the idea under consideration or thoughts about a related idea, while only 55 per cent of the thoughts in discussions are of this type. However, if we classify those thoughts which involve synthesis of ideas and attempts to solve problems or questions raised, the discussions are superior to the lectures (8 per cent to 1 per cent). Thus it may be seen that the lecture is especially successful in securing the attention of students to what is being said, but that it evokes primarily those thoughts which are appropriate to the following and comprehending of informaion, while the discussion is more successful in evoking complex problem-solving types of thought.

Few of the discussions we have studied to date have been successful in securing anywhere near maximal amount of problem solving. However, if we consider evaluation, synthesis, and application as representing relatively active types of thinking which are important for the development of problem-solving abilities and skills, four-fifths of the discussions evoke more thoughts of this type than the average lecture. Much must be done to suppress the distracting thoughts engendered by the great variety of persons and activities in the discussion, but it does seem that the discussion holds greatest promise for the development of intellectual abilities and skills on the part of the students.

All this suggests that if the objective of education is the development of knowledge about a topic or field, the lecture is a far more efficient method of communicating such knowledge and of securing the attention of students to these ideas than is the discussion. However, if the objective is the development of abilities and skills which are problem solving in nature, the least efficient discussion is superior to most of the lectures.

The discussion class, ideally, is a cooperative attack on a common set of problems, based on a common set of data, materials, and experiences, in which the problem is pursued to as complex and deep a level as possible. The instructor, ideally, in a discussion class helps the group focus on the common problems, helps them extend and deepen the problem, brings whatever resources he may have to the attack, and finally, helps the group recognize when the problem has been solved, as well as the further implications of the solution. Considered in the light of thoughts reported, the classes we have studied to date vary widely with regard to this ideal. In one class only 37 per cent of the students' thoughts were relevant to the discussion, while at the other extreme the value reached 83 per cent. The proportion of problem-solving thoughts varied from 12 per cent in one class to 66 per cent in another. Our evidence would seem to indicate that considerable effort can still be expended in improving methods of conducting discussion classes.

We have pointed out some characteristics of the instructor's role in a discussion. The instructor occupies the role of leader because he has the necessary experience and competence in attacking the types of problems under consideration by the group. The instructor functions as a mentor and pedagogue, not as a judge of the worth or letter grade to be assigned to the members of the group. When the instructor abandons his role as leader of the discussion and attempts to become the judge of the students, he stirs up a great many thoughts which prevent effective problem solving. In one class we studied, the instructor expressed repeated annoyance with the contributions of the group and spent much time in criticizing individual students and in bewailing his own sad lot to be faced with the problems of teaching such a miserable class. This, of course, was an extreme case, but the proportion of thoughts in this class about the instructor, other students, and the self was twice as great as was found in the average discussion class. As might be expected, little time or thought was available for problem solving.

The type of discussion we have characterized as ideal from the viewpoint of development of problem-solving competence requires time to develop. If the problems considered by the group are important problems posed skillfully by a capable instructor, the student can come to see their importance in time, especially if they are regarded as challenging by his fellow students. In our experience students at first have some difficulty in participating (either overtly or covertly) in discussions centered around problems, since for most of their careers they have been expected to listen to someone lecture to them or have been expected to "recite" to the teacher. We find the first sessions of a class evoke a great variety of thoughts about the nature of the situation, and about other students and the instructor. There is also in these initial discussions a great deal of anxiety about the possibility of being called upon and about the adequacy of the self. After a number of classes, we find the student gradually able to resist a great many distracting thoughts while he focuses more and more on the thoughts which are clearly relevant to the group problem solving.

So far, we have been considering the effect of method, teacher, and time on the thoughts reported by students. Characteristics of the students are also influential in determining the kinds of thinking done. One of the major difficulties in conducting a discussion is to take into consideration the variety of abilities and interests represented by the members of the group. There is, however, little relationship between the extent of relevant thinking and the level of scholastic aptitude of the student. An inspection of the scatter plot showing the relation between a scholastic aptitude test and relevant thinking reveals that the greatest amount of relevant thinking is done by students who are slightly below average in scholastic aptitude. We would venture the explanation that this is the result of the way in which discussion classes are conducted, and reflects the general observation that the instructor attempts to ask questions and handle the discussion in terms of the average students in the class rather than in terms of the exceptional extreme ones. A relatively low proportion of relevant thinking is done by the high as well as the low students on scholastic aptitude. Perhaps some of the irrelevant thinking of the high-aptitude students can be explained in terms of familiarity with the ideas, or boredom with the classroom proceedings; these students become more prey to distractions (ever present in the classroom) as well as to tangential thoughts (usually self-stimulated).

In contrast with the lecture class, the discussion class involves a maximum of interpersonal relationships. The thoughts reported about other persons and the self in the average discussion are twice as frequent as those reported in the average lecture. We have already referred to the effects of a hostile instructor on the thoughts of students. This type of evidence, and a more qualitative analysis of the reports of thought processes, indicated the probable importance of particular personality characteristics in determining the kinds of covert as well as overt participation in discussion classes.

E. L. Gaier[8] investigated the relationship between three selected personality characteristics and the thought processes of students in class. He also studied the relationship between these characteristics and performance on different types of questions in a comprehensive examination. This study represented an especially careful and detailed investigation of eleven subjects over a period of four and one-half months. These students were in an American history course under an instructor who is an able teacher with a relatively warm and supportive relation with students.

Evidence on personality was secured by means of the Rorschach test. This is a projective technique in which the subject is presented with a standard series of ink blots and is to report what he sees in each blot. It should be noted that there are no correct answers, but the patterns of responses are used to infer major personality characteristics. In this study the answers were independently judged by two Rorschach experts. In order to quantify the data for statistical purposes, the students were assigned ranks on the three personality characteristics which were believed to be relevant for learning: anxiety, rigidity, and negativism. The rankings were done with a relatively high degree of objectivity; the results from the two judges correlated between +0.75 and +0.85 for the three personality characteristics.

In the ratings of anxiety, the judges sought to arrange the subjects on the extent to which they can resist becoming fearful and panicky to situations which may present a threat to their own self-esteem. Individuals vary in the extent to which they can handle or cope with threatening situations before they resort to behavior which is maladaptive. It is anticipated that such threatening situations frequently occur in discussion classes and most certainly occur in examination situations.

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[8] "Selected Personality Variables and the Learning Process," *Psychological Monograph* 349, vol. 66, 1952.

On the comprehensive achievement examination, the individuals who are most prone to anxiety do as well as others on the knowledge of specific information ($\mu=0.34$), but they do relatively poorly on problems which involve analysis, application, or synthesis ($\mu=-0.48, -0.61, -0.42$). It is likely that anxiety does not disturb simple memory function, but it does disturb more complex problem-solving behavior.

The anxious individual spends much of the time in class thinking about himself rather than about the problems under consideration. There was a correlation of $+0.45$ between the extent of thoughts about the self and the anxiety level. Most of these thoughts of the anxious individual revolved around feelings of inadequacy, both as a person and as a member of the class. The anxious individual also spends considerable amount of class time thinking about specific objects in the classroom ($\mu= +0.55$)—people's dress, the blackboard, an odd chair, a crack in the wall, etc.,—something concrete and tangible which provides no challenge or threat to the self. The anxious individual spends some time in actually thinking about the problems being discussed, but this rarely involves formulating answers to problems being raised. Much of this thinking was directed to taking solutions formulated by others and finding additional applications of them.

In general, the anxious individual responds to situations in terms of familiar and readily available responses. These responses are focused largely on the self or on some tangible and easily available part of the environment. They are less frequently responses which are adaptive to the problem or situation.

The second personality variable, which undoubtedly is not independent of the first, is what has been termed rigidity. By rigidity is meant the inability of an individual to change his set or approach when it is inappropriate. It involves a stiffness or resistance to attempts to produce change. In effect, the individual makes use of stereotyped reactions even where these habits, sets, and behavior are not fully appropriate or adaptive to the situation. The Rorschach experts ranked the subjects along a continuum of generalized rigidity.

When Gaier related rigidity to the tests of learning outcomes, he found a pattern of relationship which, from our theories of problem solving and personality, was almost perfect. The rigid students tended to be the best ones on knowledge of specific information ($\mu = +0.73$), that is, they were good in remembering facts and generalizations which had been presented to them. There was a slight positive relationship between rigidity and the ability to make use of the analytical methods studied in the course ($\mu = +0.20$), but these students were almost completely unable to apply ideas and principles to new situations or to effect any synthesis or integration of the ideas ($\mu = -0.71$). Thus these data would indicate that the rigid individual is well able to handle the highly structured, specific, and familiar material. However, he is unable to interrelate such material or to apply it to new situations.

Like the anxious individual, the rigid person spends a great deal of time in class thinking about himself. The rigid person thinks less than other students about the teacher ($\mu = -0.55$) or the other members in the class ($\mu = -0.20$). One of the outstanding characteristics of the rigid person was the tendency to continue thinking about the specific words and phrases used in the class long after the group had gone on to other matters (+0.62). These individuals also become easily irritated or bored with the class ($\mu = +0.43$). They become concerned about the rate at which members of the class talked, the pace at which the class was moving, and they were especially bothered by the lack of clarity or the lack of clear and definite answers to questions. They spent more time than other students in thinking about concrete objects within sight and hearing (+0.43).

The rigid person does not fully participate in the problem solving of the class and is overly occupied with himself and with minutiae in the situation. This would in part explain his difficulty in solving problems on the comprehensive examinations. The implications for the teaching situation are not as clear. Luchins[9] has shown relationships between rigidity and problem solving which are in agreement with these. Some of Luchins' work as well as our own studies on problem-solving remediation[10] have indicated that individuals can become more flexible in their attack on problems if they can become more fully conscious of what they are doing and if they can become aware of the variety of approaches which have been used by others. That is, they cannot invent new ways of attacking problems, but they can become aware of the extent to which they are persevering in a particular kind of attack as well as the variety of attacks which are possible.

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[9] Abraham S. Luchins, "Mechanization in Problem-Solving: The Effect of Einstellung," *Psychological Monographs*, No. 6, vol. 54, 1942.

The third personality characteristic Gaier studied was what has been termed negativism. This is a generalized attitude of opposition to ideas, suggestions, and commands, as well as to people. There is an impulse to disagree, to be hypercritical, and to be uncooperative.

There was almost no relationship between negativism and the examination scores, the highly negative individuals doing as well as other students. However, the relationships with the conscious thoughts in the class were quite interesting.

Much of the time in the class is spent by the negative individuals in evaluating (negatively) other students and the teacher, or in depreciating the ideas being discussed by the class. The extent to which these negative thoughts are about people or ideas seems to be a function of the level of intelligence, with the more intelligent individuals attacking (in thought) the ideas. The negative individuals spend considerable time in thinking about situations and events which are completely outside the classroom or which are irrelevant to the class discussion. They are easily distracted and appear to be under a good deal of tension.

One of the major problems of a teacher in handling a discussion is recognizing the presence of these hypercritical individuals as well as in avoiding being lured into spending a considerable amount of the class time in following the false scents raised by such individuals, especially when these are primarily to gratify the needs for opposition rather than because of their clear relevance to the problems being discussed. If their thoughts can be properly channeled, these individuals can be highly stimulating members of a discussion class;

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[10] B. S. Bloom, and Lois Broder, "Problem-Solving Processes of College Students," a supplementary *Educational Monograph*, University of Chicago Press, 1950.

and if their negativism can be turned to ideas rather than people, they may, by virtue of this negativism, become highly creative and original in their problem solving. Thus negativism properly used can become a useful social characteristic. To the extent to which it is merely generalized opposition, it is frustrating and tension-producing for the individual and useless to the group.

In summary, Gaier has found that particular personality characteristics which can be identified before a course begins are influential in determining the nature of the individual's participation (at least in thought) in a class. As we try to develop our discussion methods to help individuals learn ways of attacking complex problems, we must learn to recognize these characteristics and we must develop methods of coping with them. Much of our discussion procedures will be ineffective and represent wasted time until we learn how to adapt them not only to the varied intellectual abilities of the students but also to the varied personality characteristics of the group. We find that, in general, about 50 per cent of the discussion time is now spent by students on thoughts which are almost completely irrelevant to the problems and topics which are presumably being considered overtly. If we are to make more effective use of these very costly and time-consuming instructional methods, we must find ways of sharpening what is now a blunt tool.

He also found significant relations with measures of achievement. These personality characteristics are especially important in determining the extent to which individuals can do complex problem solving. If the objectives of instruction are limited to the acquisition of information, these personality characteristics are relatively unimportant. It is as we attempt to develop the ability to do critical thinking and the ability to relate ideas learned in a course to new situations that personality characteristics must be considered. Thus as the schools attempt to develop more complex, and it is hoped, useful traits in the individuals, it becomes important to consider not only the level of scholastic aptitude of students but their personality characteristics as well.

The evidence on the thought processes reported by students yields meaningful relationships with a variety of variables in the learning situation. Such data do much to clarify the relationships among learning processes as well as to explain the relationship between learning processes and learning products or outcomes. The writer has been both amazed and delighted to find that such delicate and tremendously varied phenomena as the conscious thoughts of an individual have such substantial and clear relationships with more easily collected and observed behavioral phenomena.

Although these studies of thought processes were designed to investigate theoretical problems of learning, it is clear that they have some relatively practical applications. We have already pointed out their use as a means of in-service training for the teacher. To face oneself through the mirror of a sound recording of one's classes is always enlightening. However, to face some of the consequences of particular actions in the class in the light of the thoughts students have which can be traced to these activities is almost breath-taking. The teacher examining these data carefully begins to really understand how learning takes place and how the complex relationships to which we have addressed the chapter take place. Such insight and understanding on the part of the individual teacher may be the basis for improvement in his methods of leading a discussion. A brief statement of some of the practical consequences and implications of our research in this area may be of value for improvements in the general art of developing discussion classes.

Of foremost value is the distinction between overt and covert participation. One is no guarantee of the other. The teacher who judges the effectiveness of his class or of a particular student on the basis of overt participation in the discussion is using an extremely inadequate and frequently erroneous criterion. This is not to say that participation is useless as a criterion or that it is not to be sought in discussion classes. It is only a partial and one-sided view of the learning process; most of the participation of an individual student in the learning process is at a covert level. Incidentally, it suggests that some independent measure of learning is needed if the student is to be judged validly on his achievement.

One is impressed by the power of the immediate environment in determining or stimulating the thoughts individuals have, while at the same time finding that only about one-half of the thoughts students have are relevant to the topics and ideas being considered in the discussion situation. This suggests that the discussion class is still an extremely blunt educational instrument, although there is tremendous promise of its potential value in stimulating learning while students are in class. The problem still remains of how the discussion can compete with the many other distractions within the immediate environment.

The major problem in improving the discussion method for the purposes of developing problem-solving abilities is that of reducing the proportion of thoughts which center on the self or on other persons present. The solution to this lies in some combination of the following: First, the instruction must be student centered in that recognition must be given to the anxieties and difficulties of students and to their need for a supportive classroom environment where learning rather than competition and individual appraisals are seen as central. It may be reassuring and helpful to students to be informed of their progress in the development of specific intellectual abilities and skills, to be offered diagnosis of their specific characteristics as participants in a discussion to be shown their special weaknesses and strengths in attacking problems. Second, instruction must be instructor centered in that the instructor has central function in organizing educative experiences and in bringing to bear on the group activities his own competence as a specialist and teacher in a subject-matter field. Finally, instruction must be problem centered in that challenging problems must be raised which can be attacked by a group cooperatively. Such problem solving must become increasingly complex in breadth and depth.

Part Two

THE HUMANITIES

R. F. ARRAGON

CHAPTER II. *INTERPRETATION AND DISCUSSION*

IN ASKING themselves what and how they should teach in the humanities, teachers are asking what the relation of the past to the future should be. As one of the agencies responsible for communicating the accumulated customs, skills, knowledge, and values of the older to the younger generations, the teaching profession may be considered the spokesman of tradition, the conservator of society and culture. Hence teachers are accused both of facing backwards (while teaching history, literature, or philosophy), and of laying a dead hand upon the newness of the future (while not adjusting to the "realities" of modern life). Yet they are supposed by others to be under a special obligation to do nothing more than to transmit a particular way of life and an habitual pattern of thought, to have a closed rather than an open system of ideas. Both of these attitudes are embarrassing to the teacher, particularly if he be historian and humanist, for he knows that the past should form the present springboard for the future and that it is a point of departure, not the terminus.

Looking toward the future, the teacher of history and the humanities holds that the achievements and wisdom of the past will contribute to its richness and sanity if what is handed down is freshly thought about. Only by being rethought can the past be understood and so made fruitful. He will point out that the ideal of thinking for oneself needs a key position in Western tradition. This key is given by the teacher to the student in the form of stimulus to think for himself and so form his own organized body of ideas and attitudes.

Few teachers of history would fail to agree with Robin George Collingwood's statement: "In the history of philosophy, as in every other kind, nothing capable of being learnt by heart, nothing capable of being memorized, is history."[1] Approaching the teaching of art in the same spirit nearly a century later, the painter Courbet wrote this reply to students who asked him to direct a studio: "I cannot teach my art nor the art of any school, since I deny that art can be taught, or in other words, maintain that art is completely individual, and that the talent of each artist is but the result of his own inspiration and his own study of past tradition."[2] Perhaps some teachers might support the neoclassicist Ingres, exalting tradition over originality at the expense of both the teacher and the student in his words: "I am not the master. It is they (the masters of the past) who instruct you; I am only their quiz-master."[3]

Several questions arise from these points of view: How can the teacher use the past to inspire the student towards creativity? Should the individuality of the artist be emphasized at the expense of assimilation of his art as part of history? How much should the teacher consider himself responsible for developing individual inspiration in the student? Should the teacher take an active part as the student wrestles with tradition and himself? Or should the teacher aid the wrestler without dominating him, by methods akin to midwifery attributed to Socrates (though only occasionally practiced in the dramatic expository style of the Platonic Dialogues)?

To some extent the answers to such questions by college faculties and individual teachers can be inferred from the methods they employ: whether it be the lecture platform with a reading stand, or a desk between the teacher and the student, or the round table with its open circle of chairs, or the scientific demonstration table, the laboratory desks, a studio, or a Mark Hopkins' log. Important among the tools offered to students are: easy accessibility to books, art reproductions or originals, musical scores, and recordings. However, the inferences drawn from such symbols are not conclusive. Lectures may dictate facts and formulas. On the other hand, they may stimulate the imagination as the more experienced mind of the teacher suggests how to work out a problem in such a way as to challenge the less experienced mind of the student to try to do the same. Perhaps a historical lecture or a scientific demonstration may be the beginning rather than the end of an inquiry. Contrariwise, it is possible that a laboratory, instead of being a seat of investigation, may become one for imitation (the manual resembling a recipe book with answers available for immediate checking). Sometimes a conference table does not inspire initiative but demands formal recitation from each student as he parrots the textbook.

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[1] *Autobiography,* Oxford University Press, New York, 1939, p. 76.

[2] Robert Goldwater and Mario Treves (eds., trans.), *Artists on Art—from the XIV to the XX Century,* Pantheon Books, Inc., New York, 1945, pp. 295-296.

[3] Walter Pach, *Ingres,* Harper & Brothers, New York, 1939, p. 93.

Testing the information received by the student, in whatever manner, can come as examinations, whether pedagogical or evaluative in tone, written or oral. The oral quiz or recitation is a flexible instrument of teaching. It can be readily converted into a provocative, open-ended inquiry. Perhaps the quiz master plays the role of discussion leader. Then he does not expect answers from the student, but instead questions from him about the book or lecture, analysis of the ideas or problems presented. Such is possible in a lecture course with only one "recitation" a week.

This kind of participation calls for possible changes in the classroom. Sometimes it is in reading materials, lecture methods, or range of subject matter. Perhaps the changes are more mechanical in nature. Instead of rows of seats for students suggesting formality, with a teacher's desk as a barrier, the students place chairs into an informal circle, with or without a conference table in the center. At all times the students then face one another, with the teacher a part of the circular group. The teacher then becomes a chairman who acts as a guide, more experienced and responsible than the students, but still a fellow inquirer.

In this way, lively discussion becomes a vital center of instruction. No longer are questions used to prod the student or check upon his attention to the lectures or reading. Now the students become conference groups with a primary role to play in which each student himself plays a leading part as he inquires, thinks, analyzes, and offers solutions for problems. When these groups meet twice a week for discussion rather than once, a better community and continuity is established.

Regular lectures may be replaced in the formal schedule by group conference hours, or continued informally and infrequently as occasion suggests. But to eliminate lectures would deprive the student of contributions of stimulating background materials. Of course, a more or less complete shift from lecture to discussion groups is more apt to be made in courses of small enrollment than in large ones, with advanced rather than with underclass students.

To break up large classes into small groups for discussion purposes may bring objection because of financial reasons. Acknowledged, the discussion method is expensive, and though worth the expense, there is question whether its advantage cannot be had without going all the way. The answer is probably affirmative, at least if the numbers in the discussion groups are kept low. Twenty-five to a group is normal practice, but this is too large to give each student ample opportunity for participating. It would be better to reduce the group to twelve or fifteen, meeting them only half the credit hours assigned to the course. If necessary, lectures and written work can fill the gap in the schedule.

Complementary to oral expression in group conferences, writing becomes an important form of student participation. Since supervision of it is most effective in private conference with the instructor, or sometimes in small group conferences, there is added reason for keeping the discussion groups small.

Along the lines just mentioned, the development of the discussion method of instruction was initiated at Reed College over thirty years ago under the brief leadership of President Richard F. Scholz. With underclass courses, against lecture backgrounds, centered in a two-year program of parallel work in European literature, ancient, medieval, and modern history, these were set up into a program which would now be called General Education. Much of the reading lent itself well to interpretative discussion. In literature only original works were used; in history, source materials and thought-provoking secondary writers were provided; but no textbook was used. Composition was taken from its customary isolation and was made an integral part of the program, attached primarily to the courses in literature, but drawing its subject matter from both literary and historical materials. Perhaps most important of all was the general frame or spirit of the program, a historical sense of the relatedness of all kinds of human activities and expressions. Politics, economics, ethics, religion, science, literature, and the other arts were facets of society and culture, whether within themselves or considered in relation one to another. In the stimulating setting which Reed College furnished, both student and teacher were challenged to seek ideas and emotions behind the surface of things and so to discover relationships amongst them. It seemed natural for the teacher to expect the student to take part in the interpretation of a work of art, of a historical document or a philosophical treatise.

Following this development, changes of the curriculum at Reed took place gradually. The section meetings became round-table discussion groups and the number of such meetings was doubled. A larger proportion of the readings in history were drawn from original sources, such as tracts, and laws, and interpretative secondary accounts. Writings in philosophy, especially on politics and ethics, were added. Works of the visual arts and of music were considered. Then in the decade of the forties, the parallel courses in literature and history were merged with the general humanities first at the freshman and later at the sophomore level.

The influence at Reed College of the threefold emphasis upon interpretation, discussion, and original works, along with the integrative relations just presented, has been felt at all levels in the social sciences and the humanities. The Scholz curriculum showed this not only in the underclass courses but in the divisional character of the major programs, the requirement of a senior thesis for all students, the senior oral examination, and in the senior colloquium handled by the professor of philosophy. These have all remained in the college program continuously except the last, and this dropped out ten years ago only to be renewed within the past three years in an experimental form that reflects the interpretative, integrative point of view more fully than did the former course.

The present senior symposium meets in groups of ten to twelve students drawn from different major fields, with two to three faculty members representing a similar diversity of interest, for two to three hours once a week to discuss problems of value as they are raised by modern books that take conflicting positions on such matters as freedom and order in society, the nature and limitations of science, the grounds of ethics, and the role of religion. The materials, the method, and the integrative structure make it a natural sequel to the underclass humanities program.

The experiences, purposes, theories, analogies, and other factors that have contributed to developments of the sort described, whether at Reed or elsewhere, have been multiple. The trend has been in the air. One model, however, that was important at the outset of the Reed program is still worth mentioning, if only because, on the one hand, graduate schools are being held responsible for the inadequacies of college teaching, and on the other, conference discussion is suspected of being a dilution of scholarship. There is probably some truth to both charges. Graduate and undergraduate colleges should not be expected to have exactly the same purposes, standards, and methods.

But the graduate seminar can be fruitful for college teaching, at least a certain kind of seminar, in which all the members go to work on the same problem and with the same or similar materials. They may start with the problem and look for the materials on which to base answers, or start with the materials and discover the problems and the answers. It is a common enterprise whether it be the interpretation of passages in Aristotle's *Constitution of the Athenians,* the dating of a medieval charter, or the analysis of a decision of the Hague court. In such seminars both teaching and scholarship should be imaginative and critical. The analogy is applicable not only to advanced undergraduate classes in special fields but also to general courses for under- and upper-classmen.

Doubts arise, however, as to the kinds of subject matter to which this technique may be extended. A philosophical treatise is suitable material, demanding close attention to the text. When freshmen study selected chapters from Locke's *Civil Government,* or when juniors and seniors explore the richness of his *Essay Concerning Human Understanding* they must feel free to try out (in a sympathetic but critical atmosphere) the meanings they find and to indicate the passage and words that baffle them. In this way they can follow the course of the author's argument, and can examine its significance in his time. Something similar may happen with a drama or poem. Thus private reading may become public in discussion groups as it is given some measure of common or communicable understanding. Without compelling conformity or even total acceptance, suggested interpretations of vocabulary and imagery, thematic ideas and emotions, the structure of characterization and action (whether such suggestions are trite or eccentric, superficial, or penetrating) still do help to modify and to enrich the individual ways of looking at a particular literary work. In no way do such suggestions lessen the individual's responsibility to search meanings for himself. They give him a wider background and practice in interpretation.

Often copies of the object to be discussed are placed on the table —perhaps an essay in literary criticism or on the theories of art, or writings on political thought, ethics, religion, or metaphysics. For group analysis and discussion the visual arts and reproductions are especially welcome, but musical works call for more technical preparation on the part of the student.

Sometimes the undergraduates get ideas for suitable objects from the graduate students, such as the use of historical documents commonly used in group seminars in history and law. But these alone are not sufficient for the undergraduate since he lacks theory, knowledge of institutions, and adequate vocabulary fully to understand the documents. It is advisable to add other original sources, such as the use of seventeenth century mercantilist statements of policy and regulatory statutes and decrees. Sometimes it is helpful to have several short selections from various sources; at other times it is desirable to have longer excerpts with more complete material to fit broader topics. The longer selections seem more appropriate for the Reed program in which the students themselves, throughout the years, gather together chronologically cumulative materials for all the historically oriented courses. Supplementing this, the source books precede the documents with a more or less specific historical commentary. Unfortunately some go too far, suggesting what is to be found in the document.

The lecture may also play an important part in the student's exploration of a document. Perhaps the lecturer can implement with data on institutions, events, or ideas found in the document.

Then the student understands the real issues involved: what the document is actually about; how it is related to the purposes of men; how it is involved with the conditions of the times. Only when relationships such as these are thought about does the document have significance for the student.

Such discovery when strengthened by analysis becomes more than just an interpretation of a document; it emerges as a pattern for interpretation of an institutional situation, a complexity of events, or a process of social change. Often it is possible to evolve a similar pattern when the students do without documents, but use good secondary accounts supplemented by lectures. It is most unlikely, however, that packaged summaries in textbooks, or routine outlines, or definitions (from the usual manuals) could serve as a stimulus for the needed pattern.

What then are the elements which furnish stimulus to the student seeking a usable pattern? First of all, the narrative and descriptive data have to be rich enough to make profitable the discussion of the following: matters of constitutional issues, changes in forms and control of property, technological improvements, relations of church to state, an artistic style, and a theory of the universe. Next he will want to think in terms of a pattern which includes explorations of passages of a statute, the reasons for the outbreak of a war, the consequences of the promulgation of a dogma, or the causes and results of a financial depression. Good accounts of any of these happenings must contain more than factual data for interpretation. Interpretative materials are presented by such writers as Rostovtzeff, Thucydides, W. K. Ferguson, and Machiavelli. The then and now of living are in as much need of imaginative and critical discussion as are politics and economics in their concern with theoretical structure and process.

Once each student of a discussion group has gathered together stimulating material and has listened to additional stimulus in the lecture room, it is time for him to become a contributing member of the group. At this time the lecturer steps down from his platform and joins the circle of inquirers, often acting as the chairman of the group. He must see that focus is kept on the materials under examination (for evidence and concrete illustrations); that these materials be thought about critically by the group; that points are developed and linked together; that unimportant issues are discarded while important ones are enlarged upon; that events fit into a meaningful pattern; that this pattern be examined as existing in the past but directed towards its significance for the present and the future.

The instructor's objective is, of course, to get freshness of student participation. Then he must avoid coming to the group meeting with a rigid outline, or with a list of questions which bring trite, succinct answers. Rather he should come with a flexible outline, bringing only those questions which will open up fruitful discussion by the students themselves. He can then guide the course of the discussion to deal with matters of significant relationships rather than with such trivia as specific dates. In this way, with the students taking the responsibility for furnishing lively materials which stir up imagination, the critical exchange of ideas turns into a movement of ideas. The direction of this movement may be somewhat controlled by the instructor with his more extensive background of the events under consideration. Then discussion becomes not an activity to furnish conclusions, but an exercise in growth of imaginative richness and of critical acumen. This is achieved when inquiry into writings, situations, and problems is carried on in a climate such as that described.

In the General Humanities what are some of these inquiries and how are they dealt with by the group? Some pertain directly to the material at hand—the objects on the table, the materials investigated by the students. Does what the original author actually wrote square with what another author said he wrote? Turning to source materials, what do the key terms mean? What concrete substitutes can the student offer? This leads to explorations into the meanings of these words in the past as compared with different meanings, perhaps, in the present. Sometimes from this study of words the students become interested in symbols of a broader nature: metaphors, images, analogies, other figurative aspects of our language. Here again, in dealing with words and symbols the student becomes aware of relationships one with the other, evolving from those significant thought patterns which encompass emotional expression, social attitudes, and even historical events.

Consequently the student is challenged anew, first to understand them, then to evaluate the suggested relationships. Perhaps the relationships are those of logical inference. At times the steps of reasoning may be overt and can be examined for clarity and certainty. Again the assumptions are covert and must be uncovered before examination can be pursued. Usually such pursuit includes for the General Humanities both the aesthetic and causal rather than only the logical. Though the aesthetic has some place in historical and philosophical works, it has a more important one in dramas, novels, paintings, buildings, and the like. Its relationships are not only in the material surface of rhythm, line, pigment, pitch, and imagery, but also in the pattern of emotions and ideas (with their conflicts and changing intensities). Included in the group's effort at the interpretation of literature are psychological relationships requiring sympathetic and balanced handling. This is the place where causal relationships play an important role; they come to the surface in narrative wherever social or psychological change takes place.

Causal analysis is twofold: on the one hand it deals with the materials within the work itself; on the other hand it takes up the relationships between the object and its historical setting. Such analysis is applicable to works of art and those of history, each being the interpretations of men's feelings, thoughts and actions. By acquainting the student with the background of the art or historical object, understanding of the work itself takes place. Then can be seen, for instance, the principle of interrelatedness between: Athenian *polis* and the *Oresteia*; the court of Louis XIV and *Tartuffe*. While the student thinks about the democracy, social structure, or religious cults represented by these objects, he must not lose sight of the core patterns of the dramas themselves: the emotion, ideas, voice, and action which constitute drama. Here it is that the student recognizes the irony of Clymnestra towards Agamemnon and the hypocrisy of Tartuffe.

What does this type of broad analysis do for the student in the General Humanities? First of all, such a process exercises his rational judgment along with his aesthetic sensitivity. It requires and develops discrimination, with evaluation as to the importance, with relevance and effectiveness according to standards of logic, with appreciation of the artistic form. Standards (once blindly accepted) are questioned, tested, expanded, and refined by the student himself. A growth in comprehension takes place (whether about a play or a social crisis) as the student himself dares to look closely at the object, its form, its content, and its background.

This type of analysis borders on thinking more strongly than on feeling. Yet the latter has much to do with social crises and drama. From abstract evaluations the student then turns to concrete ones based upon his personal connotations of the object studied. Can the student recognize the significance of expressions of pride and hatred, of sanctimoniousness and trust unless these touch something in his own emotional experience, or are among his own social goals? To truly understand he must not only think through the material but must *feel* through it as well. He must bring the freshness of his own experiences, expectations, and values which apply. This necessitates time for emotional exploration; at this point the student is not pressed to evaluate the practical situation at once. His judgment will be the better if first he can play around with familiar emotions and satisfactions or frustrations connected with the object. These feelings and thoughts then form a springboard for cumulative imaginative and critical exploration to follow; these in turn form a springboard for acceptable critical evaluation of the work of art or the historical object. The final result of this process is stimulative towards allowing the student to test (for consistency, narrowness, crudity) his evaluations currently as his emotions, desires, or attitudes are brought into consciousness. At this point he then enriches and refines his findings.

As each student has a chance to think and feel for himself in the small group, or in the discussion class, he is affecting the thinking and the feeling of each member of the group—a democratic educational experience. Instead of teaching by rote or even subtle indoctrination, the discussion method under some control by the teacher has at the same time been thrown open wide to student participation: through visual and oral stimulation, from examining the object, from reading source materials, from listening to background lectures, and from appraisals and feelings. This method of teaching of history and the humanities rests upon the belief that judgments cannot be purely private (since no man lives unto himself alone). It is only when communication is established democratically as between students themselves and including the teacher that learning satisfies the personal and also the social ends. To meet the social needs of each student for his today and tomorrow he must learn how to think freshly about the past in order to cope with developments of the present and the future. To do this effectively the teacher must furnish the key in the form of stimulus: for the student to think for himself as he shares his thoughts and feelings with fellow inquirers and so forms his own organized body of ideas and attitudes.

JOSEPH AXELROD

CHAPTER III. *DEVELOPING A COURSE IN LIFE VALUES*

THIS chapter attempts to show how some of the problems of organizing and teaching a course called "A Study of Life Values" have been met. The course is administered and taught by members of the Humanities Division at San Francisco State College, and constitutes one segment of the program in General Education at the college.[1]

As is the case with many General Education courses today, the staff of the Life Values course has made a direct attempt to interpret to its students the purposes of the course. In the course syllabus, which is a joint product of the entire staff,[2] the student is first introduced to the concept of values and value patterns; at the end of this introduction, he finds a preliminary statement which indicates the way his work in the course is to serve one of the basic purposes of the entire General Education program; he is told that the course hopes to provide for him an opportunity to carry on the process of discovering and examining his own pattern of values. The staff tells him at this point:

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[1] This program consists of a series of specially designed courses, amounting to 45 units of college work and required of all students. Each segment of the program was planned as a link in an overall general education pattern. This pattern is described by J. Paul Leonard on pp. 183-199 in W. Hugh Stickler (ed.), *Organization and Administration of General Education,* William C. Brown Company, Dubuque, Iowa, 1951.

The humanities course here described is a one-year course normally taken by students in their third and fourth, or in their fourth and fifth semesters of study. Some twenty sections of the course are given each semester, with enrollment in each section limited to thirty. Staff members give about half of their teaching time to the course; the other half is assigned to courses in their special areas. Since the college is organized by broad "divisions" rather than by departments, such programming can be done with relative facility.

In addition to the five units in the humanities course, students are held for a two-unit General Education course, of a "participation" type, in the visual arts and music.

> We would like to make you look at those values squarely. We would ask you to make certain you can justify them to yourself. We would like to prepare you for rejecting them if you cannot justify them to yourself, and accepting other values which you can defend to your own satisfaction (p.8).

In a later syllabus chapter, this basic aim is spelled out behaviorally in four stages. The student is told that as a result of the work in the course,

> 1. You should become aware of your present pattern of values; and of the relationships between your value-pattern and the way you act.
> 2. You should *begin* to examine the values you hold; and to discover whether you can justify them to yourself or not.
> 3. You should *begin* to reject those values you cannot defend to yourself; to reaffirm those you can justify to yourself; and to absorb into your value-pattern principles you have hitherto not held, but which, on the basis of your recent experience and thinking, you can now accept.
> 4. You should *begin* to form the habit of deliberating well, before making decisions; and thinking systematically, during this deliberation, of the value-principles which are involved and the weight to be given to each (p. 28).

These four stages taken together constitute what the syllabus calls the "ultimate aim of the Humanities course"; this aim, the student is told, "the Humanities course holds in common with other courses in the General Education program."

An entire syllabus chapter is devoted to the means which the course staff has decided will best serve this ultimate end. These means are finally formulated for the student in a short list, where they appear as behavioral goals; thus it is hoped that the student will see them as direct ends of the course, and at the same time, as means to serve the ultimate aim earlier quoted. The student is told that as a result of his study of the course, he should come to possess the following understandings and skills:

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[2] Joseph Axelrod (ed.), *Study of Life Values*, San Francisco, 1952. Only the first volume of the course syllabus has appeared. Staff members who participated in the writing of this volume are E. T. Arnesen, chairman of the division, J. Axelrod, H. C. Baker, J. M. Churchill, M. B. Evans, G. H. Hinkle, and L. Wasserman.

1. He should become aware of the issues involved in the problem of values and value-judgments in human affairs.
   a. He should know what values are—a working definition.
   b. He should understand to some extent how values operate in making men behave as they do.
   c. He should be acquainted with some persistent problems about values and some of the major alternative solutions to these problems.
   d. He should understand some of the criteria by which values may be weighed one against another, and judged "better" or "worse."
2. He should be able to exercise three types of skills:
   a. He should have the skill of reading a document so that the values of the writer reveal themselves to him.
   b. He should be able to experience works of art with some degree of sensitivity and appreciation.
   c. He should be able to communicate his ideas about value problems satisfactorily; and should know the basic vocabulary which will aid him in this process.
3. He should come to understand better the value-pattern of his own environment by becoming acquainted with significant portions of the value-pattern of other cultures, past and present—both in the Western and in the Oriental traditions.
4. Through a first hand acquaintance with a select group of diverse works in philosophy and religion, literature, and the fine arts, he should become familiar with significant views on certain major value problems.

The course aims, in their specificity, were not drawn up by the staff until the spring semester 1951, after months of common planning and after a half year's experience in teaching both semesters of work.

Shortly after the course aims were drawn up in their final form, the Steering Committee was asked by the staff to reconsider the organization of course materials. There had been general agreement that the best way of introducing the student to some basic value problems was to select a certain number of masterpieces in world culture—philosophical, political, religious, fictional, as well as works in art and music—and require students to study them in order to see how the minds which created them "answered" the value problems with which all thinking human beings are concerned.

The staff reaffirmed this principle but wondered whether the course should continue to use the sequence it had adopted, which was roughly chronological. Since the course was not a "history" course, the Steering Committee was asked to consider whether a reordering of the masterpieces in some more significant sequence might help in the attainment of course purposes. For example, the staff asked, could a series of value problems supply the basic framework of the sequence of readings?

A few staff members were eager that this exploration be made because they felt that a topical arrangement of course materials would answer a criticism of the course made by some members of the central Committee on General Education at the college; this criticism, briefly (and perhaps therefore unfairly) stated, held that the course dealt with the "past" rather than with the "present."

The humanities staff as a whole, however, did not find meaningful the controversy, which raged in some General Educational circles, as to whether current materials are better than "historical" materials in teaching courses in General Education. Those who hold that current materials should be used feel somehow that their very contemporaneity must make them vital and alive to the student. But it is obvious that a document takes on vitality and life only as the student's experience with it is vital and alive; hence the crucial decision comes not in the choice of a Greek play or a contemporary play, but lies rather in the sort of experience the course staff provides for the student with whatever materials it chooses to use.

For this reason, at the meetings of the Steering Committee, no undue concern was felt over the criticism that the course deals with the past and not with the present; nevertheless, in its report, the committee tried to indicate its view on that particular issue. One of the paragraphs of its final report reads as follows:

> What the student should gain is not merely information, nor solutions to temporary past or present situations, but an ability to think about values

> in life which, we hope, will be applied in the student's future life to situations we cannot now discuss with him because those situations have as yet not taken form. To those, therefore, who would claim that our course is not good because it deals with the past rather than with the present, we would answer that the basic aim of General Education is not so much concerned with knowledge of the past or of the present, as it is with the kind of knowledge that we hope will lead to certain kinds of action in the future; and that our course uses for teaching purposes some of the best, most crystallized statements of the past, together with constant reference to the student's present experience, in order to affect his future actions.

The main purpose for the committee's meetings, however, was not to discuss this issue but to reconsider the course organization. The committee followed the staff's instructions by deliberating over possible "topical" schemes to replace the chronological sequence. A tentative topical arrangement for the first semester's work, in which the course readings were reordered under a half-dozen value problems, was worked out and submitted to the staff. It was received with great interest, and the committee was asked to complete the task and bring before the staff a finished plan.

The Steering Committee's final report (dated April 20, 1951), and its approval by the course staff, were significant points in the development of the humanities course. It does not easily lend itself to summary; hence its crucial paragraphs (with the exception of the one already quoted) will be given here.

> The Committee concluded, after much discussion, to recommend to the staff that a topical arrangement for the Humanities course should *not* be adopted. . . .
>
> A topical arrangement is, of necessity, an arbitrary arrangement—that is, although a topical plan *can* be worked out which follows through from a kind of inner necessity, its assumptions and its basic frame remain merely matters of common consent. Aside from the difficulties of securing such common consent (which we believe is a great difficulty, and which we are now convinced is an *unnecessary* difficulty), there is an even more important argument against it.
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> An arbitrary arrangement, while it might suit admirably some staff members (temperamentally and philosophically) may prove—indeed, we predict, will prove—so confining to others that their teaching will be inferior to what it otherwise might be. On the other hand, the present organization has that degree of looseness which cannot be so detrimentally confining.

> Further, the Committee became convinced that the range of values inherent in any of the texts or works of art which we study will be prevented from coming across to the student if the individual text is made to subserve any externally imposed organizational plan.
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> Each text or work of art, being the individual entity which it is, calls for its *own* frame and should not be forced into any other.
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> The Committee would like to underline this point. The texts, it asserts, should not be studied in our course primarily because they illustrate an age or because they fit (or are said to fit) some pattern external to themselves. It is well for the student to see some works as "typical" of an age, or of a certain kind of solution; but this knowledge, though it should be taught, must remain secondary.
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> The Committee affirmed the view that we do not ask a student to read a work in the Humanities course primarily because the work reflects *something else*; it is the work itself we want the student to know. And the claim of the course is that an understanding of a well-selected group of works (and hence of the values they embody) will accomplish the purposes we have agreed to.
>
> If external factors are considered—and good teaching demands such considerations, e.g., the age in which the work was created, or a contemporary situation which happens to be close to the student's experience today—it should not be for the sake of these external, passing factors that the work is studied; rather it is for the sake of understanding the values embodied in the work that the external factors are considered.

The next paragraph of the report is the one quoted earlier, which maintains that if a course requires the study of masterpieces created in the past, it does not follow that the course therefore deals with the past and not with the present; that, indeed, General Education courses deal essentially neither with the facts of the past nor with those of the present, but rather with the development of attitudes and abilities that will affect the future decisions and actions of students. The report then ends in this way:

> With these considerations in mind, the Committee concluded that neither "cultures" nor "problems" or "topics" should constitute the units of the course. The masterpieces themselves are the only proper units.

When this report was submitted, the staff not only approved the committee's recommendation but directed the Syllabus Committee to incorporate into the syllabus the philosophy expressed in the committee's report, so that the students in the course, too, might share in the staff's thinking.

Thus, one of the sections of an early chapter in the syllabus begins with the following paragraph:

> When you tell your friends and family about your work in the Humanities course, several of the questions they will undoubtedly ask you are these: Exactly what sort of study is it? Is it a course in the history of culture —as a glance at the reading list might mislead one into supposing? Is it a course in literature, in the broad sense of that word? Is it a course in that rather mysterious study called "philosophy"? The answer which you might give them is that although our course is, in a sense, all of these, it would be inaccurate to say that it is any one of these, or even a combination of them.

It is then suggested that someone might see the course as one in "the great books." But the student is told that the course does not "center" on the great books of the past, since it is not the readings which are at the center of the course, but the student himself, and his development of the principles by which his future choices will be made.

Nor is the course, the student is told, a "history" course, even though the readings are arranged in semichronological order. There then follows an explanation of the sequence which was adopted for the readings:

> We have adopted a chronological arrangement of the readings (after considering and rejecting other ways of organizing our materials) because it enables us who are teaching it, to start out with the least number of assumptions. That is, any other kind of organization would already presuppose a "philosophy" of some kind—would already indicate *our* answers to some questions we would not like to give our answers to.
>
> For example, we could have organized the course in terms of a series of "problems," and then we could have organized the readings around those problems. But our very choice of problems would indicate that in the view of the Humanities staff, certain problems are more important to consider than other problems. And this we cannot do, since that very question is one of the major questions the course wants you to think about.

The chapter explains that even though the course is not a "history" course, subsequent portions of the syllabus take pains to place each of the required texts in its historical setting. The student is told the reason: that before he can consider problems of value embedded in the text, he must understand it; that it is often impossible to understand a book if the reader does not know something about the time in which it was written.

This reason is of course a real one; but there was a second and perhaps more important reason for the decision to include in the syllabus the historical background for each required text. This second reason is not given to the student. When the course was first taught, it was discovered that some of the staff were taking two or more class hours to lecture to their classes about the life of the author and of his period. Some found, indeed, that so much class time had to (they claimed) be devoted to these historical factors that the direct discussion of value problems was relegated to a chaotic last session of the four or five spent on the masterpiece. It was therefore hoped that a syllabus chapter supplying this information to the student would remove the necessity or compulsion to spend any large amount of class time on historical backgrounds.

The syllabus reiterates the staff's agreement about the place of such information: "Such historical knowledge is given primarily for the sake of enabling you to understand the book better. It is the book and what it has to say that is the important thing—and not these external facts about it."

In discussing the relevance of present-day problems to the discussion of the various texts, the syllabus cites the "loyalty oaths" demanded in some locations of teachers and other public employees and suggests the relationship of this problem to a consideration of Plato's *Apology*. Nevertheless, echoing the Steering Committee's report, the syllabus emphasizes a principle which underlies the course:

> But you must see that it is not merely for the sake of understanding any temporary past situation, or any temporary present situation, that these books are being studied. It is rather the reverse. A discussion of both past and present situations should serve to clarify the principles that an author is trying to set forth. And it is the understanding of these principles and their effect on your future life, if you accept them, that is most important. . . .
>
> The Humanities course asks you to experience some of the best, most crystallized statements of the past, and to consider them in the light of your

> present day experience in order that your future decisions and actions may be the ones that will be best for you personally and for the society in which you live (p. 26).

It was earlier noted that the humanities staff favored a framework for the course which would oblige its members to teach the same materials toward the same ends, but which would not be so rigid as to impose upon the instructor an unnecessary body of assumptions. The basis for its preference was this: that such rigidity might lead, for temperamental or philosophical reasons, to discomfort in teaching the course and even—the word is strong—sabotage. For many an excellent but rigid General Education course plan (as some staff members knew through experience at other institutions) has been sabotaged in the classroom by these instructors who, in their hearts, did not accept it.

Nevertheless, the Life Values course obviously does operate on the basis of a number of assumptions; and it might be well to examine a few in some detail at this point.

One basic assumption has already been made clear, namely, that the individual text must not be made to subserve any externally imposed scheme; that, indeed, each text or work of art, being the individual entity which it is, calls for its own analytical frame and should not be forced into any other.

The acceptance of this principle, as was seen, led the staff to a rejection of an organizational plan whereby the readings would be grouped around a set of value problems. The assumption carries with it another implication: that the works studied are not taught primarily as examples of various *art forms*. It has been noted that the Life Values course differs from those history-type humanities courses in which the masterpieces are studied primarily to vivify for the student the characteristics of a particular cultural period in the past. But it is now clear, also, that the Life Values humanities course differs just as sharply from those which assert that works are to be studied differently according to the genre to which they belong and which take as their primary aim the teaching of these different analytic modes.

Unlike such a course, the Life Values course does not ask the student to consider what makes one work a play and what makes another work a novel, or more accurately, this is not the sort of question with which it is characteristically concerned.[3] Nor does it, therefore, supply to the student for each of the art forms an analytic framework according to which the masterpieces "representative" of that art form are to be studied.

It would be inconsistent with the position the course takes on these questions, therefore, if it were to make an attempt to impose a common analytic framework, applicable to all (or to some) of the works studied. However, for pedagogic purposes, one small compromise is made. The syllabus does cautiously suggest a series of questions which the student might keep in mind in his study of each work. This listing is divided into six groups of questions, and is introduced to the student as "one of several possible schemes." It is made clear that the categories themselves, and the questions in them, are meant to be suggestive only. They run as follows:

1. Biological and psychological values: What are the author's views about what people are like? How does he look upon and analyze human motives and reactions in concrete situations (if he deals with concrete situations) ? How does he look upon his own motives and reactions (if he reveals them and his attitude toward them)?
2. Values concerning personal relationships: What are the author's views about what men *ought* to be like in their individual relations with other men? In his presentation of men's motives and reactions, does he reveal his approvals and disapprovals; and if so, can his reasons for approval and disapproval be disentangled and reformulated? What are his views (if they are given, either explicitly or implicitly) about sex, love, marriage, familial relationships, etc.?
3. Social-civic values: What are the author's views about how *groups* of men behave and how they ought to behave; about the democratic form of

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[3] One observation may help clarify this point. In a class discussion on Aristotle's *Poetics*, for example, in the Life Values course, it would be noted that Aristotle did apparently consider that *kind* of question (i.e., What makes one work a drama and what makes another work a novel?) to be significant. And it would be hoped that the discussion might open the issue: *Is* that kind of question significant? But the type of humanities course organized around the different *forms* has, by its very organization, already announced to the student that this question *is* significant. It will likely go one step further, and supply to the student a particular theory according to which the works are to be analyzed. It is obvious that staffs of such courses, unless they are small or unusually homogeneous, must have great difficulty in finding an analytic frame which will be acceptable to all staff members.

social organization and other forms; about what the attitude of the individual toward the group should be; about individual freedom and control; about the nature of social institutions and the possibility of their improvement?

4. Values concerning nature and the supernatural: What is the author's view of man's relation to nature (either as he directly presents it, or as it may be inferred from his description of the various forms of nature)? What are his views about the existence of a Supreme Being (or of many superhuman beings) and His (or their) relation to men? Are his views about nature and the supernatural closely connected with his views about the behavior of men toward their fellow men?

5. Aesthetic values: What is the relationship between the author's (artist's) mode of communication and what he wishes to communicate? What is the dominant "quality" of the whole of the work, and how do its various "parts" serve to build up this quality? How may the over-all design or structure best be described?

6. Historical-cultural values: What does the work show about the cultural period in which it was created? What were the values dominant in that period (or accepted by a significant portion of the population) as the work reveals them? Does the author indicate approval or disapproval of these values—and for what reasons?

These questions were intended to give the student a rough idea of the kinds of questions the course asks him to be concerned with in his study, but that the precise formulation of the relevant questions would be *different* for each work.

We have been considering one crucial assumption under which the Life Values course operates. From this first assumption, there follows a second: that the traditional, clearly drawn distinction between "philosophy" and "art" is to be rejected. The distinction referred to here is one which supposes philosophical works to be of a different nature than works of fiction, drama, poetry, and the nonverbal arts; and further, supposes that there are two distinct modes of experiencing these two distinct kinds of works. The course staff did not have to agree that philosophy and art are essentially identical; but it did have to agree that the "values approach" constitutes a single, fruitful way of experiencing all creations of the human spirit.

This point, here expressed so abstractly, is nevertheless so basic (for the answer which an institution gives to the problem it raises will largely determine the kind of humanities course it decides to offer) that a specific incident will here be recounted to underline and clarify it.

At one of the staff meetings in the fall of 1951, the humanities instructors were considering the advisability of dropping Joyce's *Portrait of the Artist as a Young Man* from the list of required readings. One of the "philosophy men" on the staff spoke in favor of dropping the book from the list; his argument (to state it briefly) was that the problems with which the book deals do not emerge sharply enough, nor does Joyce's treatment of them permit the reader to see where he believes the solutions lie.

One of the "literature men" on the staff spoke up at this point, and asserted that the comment just made was not merely an argument against the Joyce novel but expressed a basic objection to the entire "poetic" mode of communication; for, he went on, poetry does not, in any obvious way, meet "head on" the problems it presents and does not attempt to "give *the* answers." A listener at this meeting could (if he had wished) hear this implication in the literature man's comments: that he did not think his philosopher colleague understood the nature of poetry and hence could not possibly have understood the Joyce novel.

After the meeting (at which, incidentally, the staff decided to drop the Joyce book from the reading list),[4] the literature man apparently realized, or was told by a colleague, the possible implication of his remarks at the meeting. He hastened to write a note to the philosopher, in which, after stating the facts, he said:

> It is to deny this possible implication that I am writing this. It is not only a false implication (in terms of what I know my meaning to have been) but also a dangerous one for our course. Yet it is a possible one, simply because you are a "philosophy man"—and presumably, therefore, as the world classifies people, *not* a "literature man."
>
> Aside from its danger for a course such as ours, this distinction is so contrary to one of my deep convictions (since I hold that a man cannot be

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[4] Mainly, it appeared, for the reason that the novel was too difficult for our students; it did not "teach well." One witty member of the staff later observed that in his experience, whenever a college instructor says a book is too difficult for students and therefore should not be taught, what he really means is that the book is too difficult for *him* and therefore he knows he cannot do an adequate job discussing it with students.

> either a "philosophy" or a "literature" man, in any significant sense, without also being the other), that I must now—having gone this far—go on to make clear my precise position on the subject we were speaking of at the meeting.

The memorandum then presents this instructor's rejection of the distinction between "art" and "philosophy"; his exposition begins as follows:

> Let me begin with your answer to the comment I made when I said your objection to the Joyce is in fact an objection to the entire poetic mode of communication. You said that was not so, and you gave two examples—*The Divine Comedy* and *Paradise Lost*—in which, you said, the problem was met "head on" and a clear solution was given. . . . But what makes these works meaningful for me is not their statement of and clear solution to the problem they nominally deal with, but precisely the problems they do not (because they cannot) meet "head on" and to which they do not (because they cannot) give clear solutions. It is the presence of this element which makes them, for me, "poetic."

The writer then sets forth his primary criterion for judgment (which is too long to be quoted) and makes this assertion about it:

> To meet this criterion minimally, a philosophic work must be "poetic" and a work in imaginative literature must be "philosophic"; and the greatest works of the mind cannot be classified as either one *or* the other.

He then brings his discussion back to the nature of the humanities course (in which, obviously, he must feel comfortable, holding the views he does), and he says of the Life Values course that he has never looked upon it as an "integration" of philosophy and literature because, as he puts it, two things which are the same, in their most significant creations, do not have to become integrated. His memorandum concludes: "My main message, however, is that I do not think you don't understand the Joyce."

Although the document here quoted represents, perhaps, a more extreme view than the course framework calls for, it should be clear that the course must reject the opposed view, which does not see the "values approach" as a fruitful one except for those works that belong in certain genres or categories.

Aside from basic issues in educational philosophy such as those just discussed, on which the course staff must arrive at a common solution, the humanities course staff does not attempt to come to commonly agreed upon "answers" to the various value problems which emerge from the required readings. Visitors to the college who become interested in the Life Values course invariably ask how it is possible for the course to remain "neutral" on the issues which must arise in class discussion; they ask especially about that part of the course devoted to discussions on the Old and New Testament readings.

The answer, of course, lies in the way in which the staff has conceived of its purposes, and in its insistence that the course preaches no doctrine nor seeks to inculcate any particular set of values save that complex of attitudes of which "objectivity," "tolerance," "open-mindedness," "empathy," etc., are a part. It tries to aid the student in his understanding of various, and often opposed, "answers" offered in the *Iliad*, Aristotle's *Ethics*, the *Book of Tao*, the "Sermon on the Mount," *The Prince*, Conrad's *Victory*, and the other required works.[5] And it uses whatever means will most involve the student in these "answers" so that he may be stimulated to begin seriously the process of reviewing and evaluating the ones he has already consciously adopted or unconsciously absorbed.

In the syllabus chapter which introduces the student to the Biblical readings, special pains are taken to set the classroom stage along these lines. For example, the chapter suggests that some questions might not be as fruitful for class discussion as some others, several illustrations of such questions are given, one of which is: "Are the books of the Bible literally the word of God, or were they written, like other books, by gifted, sensitive, deep-thinking writers?"

The student, however, is encouraged to reevaluate privately his present solutions to such questions. The chapter then goes on to suggest some other questions that might be more valuable for class discussion—questions that revolve around concepts of man's relation to man and qualities of artistic beauty in the Biblical portions studied. The chapter continues:

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[5] The complete list of required readings has not been given in this description of the Life Values course, for two reasons: (1) it has changed from one year to the next; (2) the significant thing about the course is not the particular texts used, but rather what is done with each text by the instructor and students.

> For a discussion of these issues, it does not matter particularly whether or not you believe in the divine origin of the Bible; it makes no difference whether Moses wrote the first five books of the Old Testament (as some claim) or whether these books were compiled (as others claim) by an editor who combined earlier scrolls of independent origin, themselves the result of a long oral tradition.

Then the student is told about a discussion device which he may find his instructor using: that of asking the class to accept an assumption *temporarily* which some or perhaps many of the class members do not ordinarily accept, simply in order to enable the class to carry forward the discussion. The following example is given:

> The instructor may pose a question this way: "Many scholars today believe that the story of creation presented in Chapter I of *Genesis* comes from one source, and that the story of the garden of Eden, given in the next chapters, comes from another source. Assume for a moment that these scholars are correct. In that case, do there seem to be, embedded in these two narrations, different conceptions about the nature of man, or do the two narrations conceive of man's nature in just about the same way?"

Obviously, a student who believes in the divine origin of the Bible will experience discomfort in pursuing an inquiry that asks him, for the moment, to start from a position which denies this belief. The student is uncomfortable because the experience is new; the terrain of the point of view into which he is suddenly thrust is unfamiliar; above all, because he feels threatened with the loss of a mental construct which has given him support.

But only by a succession of such experiences can such discomfort be decreased; and only through many such experiences can real understanding of a "different" point of view come. How can the concept of immortality, for example, become meaningful to anyone until he is willing, if only for a moment, to see how the world looks to someone who believes in immortality? Hence the device of asking a student to accept *temporarily* a set of assumptions he may not ordinarily accept, and proceed with an inquiry on this new basis, is more than a mechanical device. It is, in fact, a special version of what has been called, in educational literature, "role playing" or "psychodrama," and may well have all the rich learning potential which is claimed for that process.[6]

Since the issues which are most charged emotionally are the religious ones, the syllabus chapter on the Biblical writings attempts explicitly to show the usefulness of pursuing an inquiry which starts with assumptions which one does not accept. After the example, which was quoted earlier, is given, the chapter continues:

> If you refuse to accept such assumptions *temporarily*, you will be doing yourself and the course an injustice. For, as Part I of the Syllabus makes clear, the course does not wish to impose any value-pattern upon you; but it does want you to consider seriously a variety of views which will help you come to your own answers.
>
> Just so, when you will be discussing, later on, the *Book of Tao*, it is not for the purpose of converting you to Taoism, or turning you from it, that we ask you to study this masterpiece in Oriental philosophy. It is part of our program to introduce you to divergent points of view about the basic issues that intelligent men have never been able to avoid thinking about.

These paragraphs, quoted from the course syllabus, summarize the point of view upon which the Life Values course was built.

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[6] The device discussed here is not only possible in class discussion; it is useful also for written papers. Consider, for example, the following out-of-class theme assignment:

Mr. Black is a haberdasher who, until recently, has considered his life to be a success. A year ago, however, a competitor established himself on the block, and by the use of methods which Mr. Black considers unethical, has drawn to his own shop so large a proportion of the community's consumers that Mr. Black is at present barely able to make both ends meet. He now believes himself to be an utter failure, and is undergoing extreme anxiety and depression. He even has fantasies in which he murders his competitor, but of course realizes how silly such thoughts are; but he is full of pity for himself and hatred for his competitor. (To save space, additional details are here omitted.)

One evening, three friends visit him, Mr. A, Mr. P, and Mr. J. It happens that Mr. A, in his thinking about people, has a point of view close to that of Aristotle, as Aristotle's views were presented in that portion of his work required for study in our course. Mr. P has a point of view close to that of Plato, as his views emerged from the Plato readings in the course; and Mr. J's ideas about human behavior are close to those of Jesus, as these were revealed in the portions studied from the New Testament.

During the evening, Mr. Black's situation becomes clear to them, and each, in turn, makes some comment about it. On the basis of the course readings, you are to imagine what these three friends might have said. The paper you are to write will consist of those three comments. They may take whatever direction (an analysis of Mr. Black's situation; a suggestion for future action; etc.) and whatever tone (disapproving; comforting; calmly reasoning; etc.) you feel are appropriate for these individuals, given the views you understand them to hold.

CHARLES LE CLAIR

CHAPTER IV. *INTEGRATION OF THE ARTS*

I

THE creative arts, long considered dispensable luxuries in the college curriculum, are occupying an increasingly central position in American education; and forward-looking educators are coming to view them as basic studies that satisfy fundamental needs in the individual and in society. Recognizing this, Pennsylvania College for Women has developed The Arts course, a two-year sequence, required of all students, integrating materials from literature, drama, music, painting, sculpture, architecture, and the dance. My assignment here is to describe this course. Since The Arts, however, represents one of five interrelated areas in our broad General Education program, its objectives must be understood first as they relate to the aims of the college as a whole.

The required program, or basic curriculum, is humanistically oriented. It focuses on man, the universe in which he lives, his biological and psychological nature, his history and patterns of social behavior, his aesthetic achievements—the area with which we are immediately concerned—and his attempts to organize experience in terms of philosophy. The basic curriculum is the dominant academic influence on each student's thinking; it accounts for more than half her college work; its courses are spread through the entire four years; and as a result, even the more specialized material in elective courses is presented in relation to this common program. Ours is a sustained effort to develop in a community of students those liberalizing values essential to a democratic society and the humanistic tradition. Ralph Barton Perry defines the humanities as embracing "whatever influences conduce to freedom,"[1] and goes on to say that their "content must be so diversified as to represent the major alternatives of thought."[2] This is the view of our faculty when it requires integrated studies in chemistry, biology, physics, astronomy, and geology rather than the familiar "year of science." And this is our reason for encouraging, in The Arts, interest not only in literature but in all the major fields of creative expression. Our integrated program, although it is designed to provide essential information in the broad areas of our culture, aims above all to encourage sound value judgments and socially constructive attitudes. Some educators say these intangibles cannot be taught, but we believe that much can be accomplished when an entire faculty combines its efforts in a program designed to achieve this goal. Students are wonderfully receptive to the range of experiences provided by The Arts course, but what I am suggesting is that their breadth of interest and inquiring spirit is the product of teaching in the sciences and social sciences as well as in our own area. No single course in a General Education sequence can be wholly successful unless other courses buttress its aims, while it in turn supports the purposes of the total curriculum.

With these objectives in mind the Curriculum Planning Committee, after reevaluating our program in 1945, assigned to a faculty committee representing literature, drama, art, music, and dance, the difficult job of planning a course in the fine arts. But how were materials to be selected from the vast store of artistic expressions available in all these fields? And how were those works ultimately chosen to be organized into a coherent, unified course? To solve these problems the committee decided upon several broad, integrating themes around which materials might be grouped. According to this plan, the elements and functions of the arts are introduced first, and the essential differences and similarities among the several media are established. Theme and subject, rhythm, melody, plot, characterization, color, line, mass—these are some of the concepts discussed. A few of these elements are peculiar to one art, while others relate to several, thus providing a basis for comparison and synthesis. The remainder of the course is arranged in approximate chronological order, with materials from the ancient, medieval, and Renaissance periods in the first year, and works from the nineteenth and twentieth centuries in the second.

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[1] "A Definition of the Humanities," in *The Meaning of the Humanities* (ed. Theodore Meyer Greene), Princeton University Press, Princeton, 1938, p. 4.

[2] *Ibid.*, p. 8.

However, this plan should not suggest an attempt at coverage, impossible in view of our limited time, nor an emphasis on the historical approach. We are concerned, rather, with broad concepts that may be valuable in the development of a personal, critical philosophy in the arts. Thus we attempt to trace themes stemming from the Greco-Roman and Judeo-Christian heritages through succeeding centuries. Sophocles' *Electra,* O'Neill's *Mourning Becomes Electra,* and Sartre's *The Flies* are seen as parts of a continuing stream of human experience. We use materials from Greek drama and sculpture to establish the formal principles of the classical temper and trace this viewpoint in the later works of Pope, David, and Bach. The concept of romanticism is established in materials from the medieval period; a discussion of Italian Renaissance painting centers in the conflict between classicism and medieval romanticism; and again, in a consideration of the nineteenth century, romanticism is used to relate Goethe and Beethoven, Daumier and Dickens, Rostand and Tschaikowsky. As the course continues, we discuss realism and naturalism, impressionism and expressionism, and recent abstract tendencies in the arts. Our concluding discussions center in major critical viewpoints: functionalism, art for art's sake, art in relation to ethics, and art in relation to the social and political scene. Critical works by Lewis Mumford, Aldous Huxley, E. M. Forster, and others are studied at this time, and each student is asked to formulate an individual critical viewpoint toward the arts. In this we reaffirm one of the chief aims of our curriculum as a whole: to encourage students to examine their experience thoughtfully and to define their personal values.

Having agreed on the basic structure of The Arts course, we began to teach it in the fall of 1946. As correspondences between our own materials and those in other fields became increasingly apparent, we were able to eliminate irrelevant data and strengthen the organization of our course. The formidable array of terms representing five areas was simplified, and semantic difficulties were resolved by formulating common working definitions. Our first fear that there would be insufficient time to present the essentials in our separate fields proved groundless. We learned that each art works for the others. A thorough study of romanticism in literature, for instance, serves as a foundation for later discussions of romantic painting and sculpture. And when a lecture on the canon in music is followed by a demonstration of the canon done by a dance group, it is apparent that integrated teaching not only lessens the time necessary to make a difficult point, but increases student interest in what might otherwise emerge as a dull technical concept.

But if we have accomplished genuine synthesis in the teaching of stubborn materials, a good deal of the credit must go to our organizational machinery. It is not enough to arrange correlations on paper. The integrated course must be administered in a way that prevents separate, divisive practices and encourages daily exchange of ideas. Both years of The Arts are staffed by five teachers from different departments. Although each of these specialists is responsible for assignments in his field, he must defend them in meetings with the entire staff, who together determine the course syllabus. The specialist is also responsible for lectures in his field, but again, his colleagues attend these talks and argue points of agreement and disagreement at staff meetings which follow. The most unifying factor in the administration of The Arts, however, is each teacher's responsibility for a small discussion section, or seminar, meeting twice a week. The instructor, in addition to lecturing in his own field, must guide a group of students through discussions in other fields and grade their written work in all areas. It is impossible under this plan for the course to become merely a parade of lecturers.

It has been argued that what we are doing is unsound because it exposes the student to professors who must pose as authorities in fields outside their training. Admittedly we are not authorities in all the arts, even though our in-service training is substantial, and though many of us are prepared in more than one field. But the truth is that the seminar teacher does not and should not present himself as an expert in all areas. He is, rather, an educator earnestly seeking, along with students, to understand and relate basic concepts in neighboring fields that have been separated too long by over-emphasis on specialization. He is the discussion leader rather than an encyclopedic source of information; when questions demanding expert opinion arise, he consults the specialist in this area and reports back to the class. This is a difficult rôle, but a significant one. General Education, in its search for teachers who are experts in synthesis, must not overlook the necessity for genuine coöperative effort among those with depth of training in special fields. We agree with Theodore Meyer Greene when he says:

> Whatever the dangers of specialization, a more synoptic view of reality, divorced from the positive contributions of the specialist, is sure to be empty and superficial. This is a truth which historians in search of encyclopedic wisdom and philosophers concerned with reality as a whole should never forget.
>
> In general, however, we need today to be reminded rather of the peculiar and tragic danger which attends specialization in any field. This danger assumes many forms but reduces in essence to a loss of perspective issuing in parochial blindness and unjustifiable dogmatism.[3]

II

So much for a brief outline of The Arts course, its attempt at synthesis, and its relation to the broad aims of our curriculum. I shall describe some of the teaching procedures we have devised and discuss more fully the goals, content, and organization of the course. But these things take their place in relation to the over-all emphasis and spirit of our work: concern for the arts as a creative and enriching way of life. Because the fine arts are of unique value—when compared with the sciences, social sciences, or philosophy—in their power to heighten sense perceptions and stimulate the imagination, we are more concerned with direct aesthetic response to creative expression than with footnotes about it. And we are interested above all in the contribution a study of the arts, both past and present, can make to the life of an individual in the twentieth century.

Dr. Hazel Cole Shupp, a practicing writer as well as a teacher of literature, has been influential in establishing this point of view through her work as chairman of the course since its inception. Indeed, all The Arts faculty are performing artists who bring enthusiasm for creative work to the classroom. Our music instructor, for example, may illustrate a theoretical principle with one of his own compositions, while lectures in drama and dance are frequently augmented by faculty demonstrations that bring these arts to life as vivid theater. The creative emphasis of The Arts course has been reinforced by the presence on campus of outstanding artists in residence: distinguished performers like Storm Jameson, the novelist; Henry Koerner, the painter; Roy Harris, the composer; and his pianist wife, Johana Harris, who have led students to think of the arts as a productive, stimulating way of life.

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[3] in *The Meaning of the Humanities* (ed. Theodore Meyer Greene), Princeton University Press, Princeton, 1938, pp. xxix-xxx.

I mention our faculty because its character and enthusiasm have influenced student attitudes. Nevertheless, we have tried to avoid the inspirational approach to appreciation. While encouraging enjoyment, we want to develop at the same time sound scholarship and skill in the academic disciplines. To achieve these sometimes conflicting aims we employ a number of teaching devices, one of the most interesting being our so-called Workshop program. The Workshop is designed to encourage in each student a pattern of involvement in the arts of the community. Reading current novels and poetry, attending plays, concerts, dance recitals, significant movies, and art exhibitions are Workshop activities required for course credit. Each semester a student must write a critical evaluation of eight such experiences, most of which take her into the Pittsburgh community. There are in addition special Workshop programs on campus. Sometimes these take the form of lectures or round-table discussions. At other times they involve student musical or dramatic performances, and one of the most rewarding of our experiments has been an annual program of poems and musical compositions dealing with parallel themes. Students may write Workshop reports, then, from the point of view of their experiences as active performers in the arts (the art of expression), as writers, painters, musicians, actors, or dancers, or from the standpoint of their reaction as members of the audience (the art of impression).

Although the Workshop encourages a pleasurable pattern of participation in the arts, it must not be thought of as a program of easy entertainment. It is designed also to develop the student's ability to think critically and communicate more effectively. Workshop reports are frequently evaluated with regard to style and content. We encourage originality of viewpoint, but demand at the same time incisive writing, valid use of evidence, and intelligent discussion of concepts learned in the course. The reports must represent a wide range of experiences, and they must deal with pertinent materials. For this reason there are approved lists of activities which, in each field, provide for stimulation and challenge rather than routine diversion. For those who have taught The Arts over a period of years, the Workshop report has proved one of the best indices of our achievement. In these interesting and often highly individual comments, we see visible evidence of student growth and the extent to which principles learned in the course carry over into applied experience.

But the Workshop, although it is a significant teaching instrument, is an extension of The Arts rather than its core. It is valuable for students to be able to relate the art of the past to their present experience, and it is even more important that they learn to evaluate their contemporary arts in terms of the highest standards found in our cultural heritage. Our central concern, then, is to acquaint students with some of the most significant creative works in history and to interest them in those questions and ideas that have plagued and inspired man since his beginnings. The content of The Arts course consists, for the most part, of masterworks, but we encourage as fresh and direct an approach to these materials as possible. In our assignments we make only minimal use of textbooks and histories, and place our major emphasis upon original materials in anthologies of prose, poetry, and drama, recordings of music, and reproductions of graphic art.

The creation of a unified course out of works representing many historical periods and different expressive media presents something of a problem, one that has been solved in other colleges by relating diverse materials to a single structure of reference. The arts are frequently taught in an historical framework; again, they are organized according to literary themes or story content; and there is a growing trend toward teaching them in relation to an aesthetic system of abstract, formal analysis. But concentration on any one of these schemes may divert attention away from the work of art itself and point instead toward historical fact, literary anecdote, or aesthetic diagram. We believe the work of art is infinitely rich and complex. It is a social document, an historical record, a product of individual personality, a psychological case history, a self-contained world of abstract forms; it is a combination of all these things and more. Therefore we approach the arts from many points of view. We do not force correlations. Where we see parallels, we indicate them; and where we do not find them, we say so. As a result, The Arts course is less tightly organized than it might be, but it is rich and lively; and we believe it stimulates students to think for themselves.

Our emphasis, then, is upon the materials of art rather than the scheme by which we correlate them. In effect this means asking students to read books, look at paintings and sculpture, listen to music, sense movement in the dance, and respond to the sum of these experiences in drama and opera. Although this program sounds simple, it is difficult to implement. We must direct students who have, for the most part, been trained only in the verbal disciplines, toward visual, tactile, auditory, and kinetic experiences in unfamiliar media. The average student entering The Arts course expects to spend several hours reading a literature assignment, but she has not been trained to "look at" paintings for more than a few minutes; and since she does not know what to "listen for" in a tone poem, she will all too often devote her energy to memorizing details about the composer's life or the composition's literary program. This is not to suggest that we have more responsibility for the development of skills in music or art than in literature. We must constantly encourage students to read more accurately, at speeds fitting the material, and to look for ideas and themes rather than mere plot. But our problem in literature is to improve an established skill, whereas in music and art we must assume that many students have had not just poor training, but no training at all.

There are two ways in which we further our aim of encouraging students to examine and experience the work of art directly. First, through study techniques and class discussion methods, we provide initial training and continuing practice in the skills necessary for appreciation of the several arts; and second, by using demonstrations, audio-visual aids, and other teaching resources, we try to make lectures and seminars a means of guiding students to immediate aesthetic response. Lectures on literature, utilizing recorded readings by Edith Sitwell, T. S. Eliot, and others, suggest the beauty and power of the spoken word, while class discussions of poetry and prose fiction center in the author's point of view, in his expressive techniques, and in the reader's response. Drama is taught as theater; problems of lighting, costuming, setting, and acting come into our discussions, and scenes are frequently staged by faculty and students. Recordings are used as a basis for discussions of music, and they are also available for study purposes in special listening rooms. Students are given exercises that develop the ability to recognize the repetition of themes, or to recognize and describe different kinds of harmony and orchestration. Ultimately, students must be able not only to define principles like atonality and polytonality, but to recognize their use in specific compositions. Kodachrome slides illustrate lectures on art, and large color facsimiles are available for seminar groups.

In addition, we use a study device called the Art Notebook, a set of small reproductions of art works, prepared for each student, which is accompanied by questions designed to increase sensitivity to line, form, and color relationships. When it is possible, questions are also keyed to original paintings and sculpture exhibited at the Carnegie Institute or in our art gallery. Finally, the cinema is used to illustrate all the arts. We use films of an orchestra in rehearsal, an artist at work, or an actor in performance, as well as films that reveal the cinema as an art form in itself. Movies have been particularly helpful in our discussions of the dance. Such vital performers as Martha Graham, Doris Humphrey, José Limon, Valerie Bettis, and Katherine Dunham, through the cinema medium, have brought to our students the kind of vivid experience which we want to make possible in all the arts.

The aims of The Arts course are reflected, ultimately, in examination procedures. Our tests usually consist of two parts: a section of objective questions for all students, to which each lecturer contributes items in his special field; and a section of discussion questions prepared by the individual seminar teacher for his smaller group. The objective test is an excellent means of rating student performance, and it provides for broad coverage of our materials. In it we are able to measure important skills, such as the ability to analyze design in a painting that is flashed on the screen, or the ability to make valid comparisons between two musical compositions that are played. But the discussion question is a better means of evaluating more subtle accomplishments. It is through critical and creative written work that we can best judge a student's originality of thought and the extent to which she has arrived at genuine synthesis in her study of the arts.

Finally, the creative emphasis in our work finds its most concrete expression in the annual integrated arts performance. During each college generation we present a four-year cycle of plays representing great periods in the history of the arts. Our first cycle included productions of Sophocles' *Antigone,* Shakespeare's *The Tempest,* Gay's *Beggars' Opera,* and Rice's *Street Scene.* Plays are selected for their historical and aesthetic significance and their relation to the themes of the course, and they are given productions which make vivid use of all the major arts. Faculty and students collaborate in every phase of production: scenery and costume design, lighting, musical score, choreography and stage movement, and of course, acting. During the year the play is used as one of the chief focuses for lectures and discussions, production problems are discussed as they arise, and all students attend the final performance and write a criticism of it. In the four-year cycle of Arts productions many of our major aims are embodied: students see visible evidence of our concern for tradition and historical continuity; they see productions illustrating the concepts of classicism, romanticism, and realism that are discussed in the course; they see how several artistic media may be integrated in a unified production; and above all, they are made aware that the arts are creative pursuits in which they may take active part.

III

The Arts course, in addition to fostering the attitudes of criticism and appreciation with which we are especially concerned, has also been successful in developing the kinds of factual competence its critics say General Education neglects. When in 1949 the General Culture Test of the National Sophomore Testing Program, which is made up of purely informational items, was administered to our students, they ranked far above the national average. Even more gratifying has been our success in arousing student desire for participation in the arts as an enriching way of life. Our achievement here is revealed not only in our daily experiences in the classroom, but in the free and undirected activities of students. Drama, of course, is always appealing to young people, but to find the student newspaper—an organ that vigorously resists any suggestion of faculty influence—placing major emphasis on art exhibits, concerts, dance recitals, and literary events is surprising to those who are familiar with the usual college paper. It is also gratifying to find a lecture on Faulkner near the top of a student opinion poll about our assembly programs. *Studio '49,* a voluntary activities group devoted to the arts, is one of the most energetic and appealing organizations on campus. More than half our students are regular borrowers from the Wherrett Memorial Loan Collection, established recently to permit students to enjoy framed reproductions of paintings in their homes or dormitory rooms; and with increasing frequency students are selecting for their senior tutorial projects subjects suggested by their Arts course experience. But most satisfying of all is the atmosphere of enthusiasm and excited interest in the arts which pervades the campus, a spirit which is immediately commented on by the casual visitor and the new faculty member.

In planning and evaluating courses, it is frequently overlooked that an effective course must continue to satisfy not only the student but the teacher. This happens only when the teacher feels he is achieving goals that go beyond his past accomplishment. Most of our staff came to The Arts course with considerable teaching experience, yet in the integrated humanities course we have found a new principle that generates surprising intellectual energy and is a source of continually renewed inspiration. One of the factors that has unleashed the educational power we all sense as unusual is the emphasis on the creative aspect of the arts and their pertinence to daily life. But this emphasis is not in itself unusual; it is accepted by many teachers in the creative fields. I believe it is the combination of this emphasis with two other conditions that has made our experiment forceful. These contributing factors are: first, our concern for a core of experience common to the whole student community; and second, our integration of materials traditionally confined within departmental boundaries.

The program at Pennsylvania College for Women involves education of the entire student community by a faculty which itself acts as a community rather than as separate individuals with divergent aims. Students benefit from instruction that reflects the concerted effort and unity of viewpoint of instructors who are working in a common curriculum, and they also gain by sharing their educational experiences with all their classmates. One of the great virtues of the old training in the Greek and Latin classics was its universal acceptance. Although teachers for many centuries have been able to count on a common preparatory training in all students, each course in today's elective curriculum must be taught, in a sense, from the beginning. The required General Education program again permits us to build on knowledge that is common to all students. This is one answer to those who say that the integrated course does not have time for depth. There is time, precisely because there is no unnecessary waste of time; the second-year teacher, knowing what has been accomplished in the first year, can begin on a genuinely advanced level. For example, in The Arts, which is normally taken by sophomores, we can build upon the freshman History of Western Civilization. We can discuss Renaissance or Greek culture on the level of aesthetic philosophy, because we know that students have a thorough historical background in these periods. In short, the education of a total student community is economical instruction; it can prevent unnecessary repetition, and it can prevent the teaching of scattered bits of information which, because they are never used again, may be quickly forgotten.

There is another considerable advantage in the common curriculum. Because it provides a wider audience, it increases tremendously the effectiveness of extra- or co-curricular activities as agencies of instruction. In the college with an elective curriculum, a visiting lecturer must speak either in the most elementary terms to the many who are unfamiliar with his subject, or on an advanced level that will interest only those few with special preparation in his field. On the other hand, if we bring in a writer like William Carlos Williams, we can assure him not only that the student group has studied contemporary poetry and that the majority are predisposed to enjoy it, but we can tell him precisely which of his poems have been read. Under these circumstances a vivid speaker can generate tremendous interest in the student community, and our faculty can make full use of the experience by introducing it into immediate discussion in the basic courses.

Group education is potent because it permits economical and forceful use of both in- and out-of-class experiences. Beyond this there is the snowballing of enthusiasm that occurs when students engage in common activities. In *The Millionairess*, Shaw develops the thesis that you cannot help making money when you already have a great deal. Similarly, in teaching, when a large number of students are genuinely enthusiastic, their interest becomes an expanding force quite independent of the teacher's personal energy. Our freshmen attend plays and concerts with their sophomore and junior friends who are taking The Arts. Through these experiences, and the discussions that surround them, they are introduced to and favorably motivated toward our course long before they enroll in it. Similarly, seniors who have completed the course do not easily drop out of the pleasant habit of participation in the arts it has stimulated. Often the teacher feels his enthusiasm is diminished and diluted as it spreads into student consciousness. In the common curriculum the reverse is true; everything one says is magnified. In educating the student community rather than isolated groups of students, we make our teaching of central concern to the majority; they in turn influence other students, and there is unleashed in this way a powerful motivating force too often utilized in sorority and fraternity life and in athletic contests.

But the common curriculum achieves something greater than increased teaching effectiveness. The college community is more than an academic environment; it is for many students a real society, a world in which to live, think, and compete for four years. Although it is in some respects an artificially controlled microcosm, college is perceived by many students as "real life" and it can be tremendously influential—just as four years in the army, or in business, or in travel can be—through its revelation of what people are like and how they live together. The common curriculum, then, can attack in the miniature world of the college community the problems of society as a whole. Through courses like The Arts we can encourage a campus world in which there is genuine understanding among different kinds of people, a world in which failure of communication between one specialist and another, between artist and public, does not exist.

Belief in the arts as a creative, liberalizing way of life is the core of our philosophy in The Arts course, and the framework of a common curriculum has done much to make our teaching effective. But it seems to me that a third factor is responsible for the freshness of what we are doing. The Arts course, from the beginning, struck students and faculty as an exciting adventure, because we are engaged in correlating materials that have not been studied together, until recently, except by a few, isolated scholars. While a few books and articles, such as Arnold Hauser's brilliant *The Social History of the Arts,* have attempted correlations among the arts, there has been scant coverage of this vast subject and very little agreement among scholars. This puts the faculty in a difficult yet stimulating position. Although our work presents many problems, we are rewarded daily by insights that shed light not only on the materials of The Arts course, but upon our special fields as well. The exploration and rearrangement of materials that have been confined within traditional academic boundaries leads to an educational enterprise that is lively with dynamic tensions, questions, and problems. This is good for teaching, and it is good for scholarship.

Working with materials from different fields has another valuable outcome; it tends to emphasize significant concepts rather than minutiae. In the integrated course one's colleagues are critical of lectures devoted to biographical and factual information that, however diverting, has little bearing on the major issues and concepts under discussion. Although we assign a wealth of background reading in The Arts course, we have discovered that by tightening our lectures and eliminating unnecessary terminology and irrelevant details we give a more vivid impression of important concepts and increase student retention of significant facts.

IV

Our staff believes in the philosophy and methods which The Arts represents, but it is always the job of good teaching to combine enthusiasm with doubt. As we proceed, we must be willing at all times to reexamine objectively, and if necessary, revise or even discard what we are doing. We must not think of present aims and procedures as absolute solutions to the problems in our field. The Arts is a massive enterprise as compared with the separate departmental courses which it has in part replaced. It can realize great power and persuasiveness, but we must see that it does not develop the didactic rigidity that threatens a required program when it is repeated over and over again. The greatest present virtue of the cooperative effort which The Arts represents is its stimulation to reexamination of our educational goals, materials, and techniques. Only by continued willingness to reevaluate what we are doing, to make changes, no matter how drastic, and to respond to new ideas can we keep the freshness and vitality which are the essence of liberal education.

B. LAMAR JOHNSON,
RALPH LEYDEN and
ZAY RUSK SULLENS

CHAPTER V. *INDIVIDUALIZATION: A MUST IN GENERAL EDUCATION*

DEFINING

IN THE current drive for commonality there is a danger of ignoring or neglecting the full development of the unique talents and abilities of the individual student. This could be the danger in the trend toward General Education. The movement itself is widely recognized as a revolt against both the diversity of offerings in higher education and against a freshman-sophomore curriculum consisting largely, even in elementary courses, of specialized subject matter selected as basic to advanced study. Against this background, General Education is repeatedly described in such terms as:

1. A search for the unifying elements of our culture.
2. The preparation of youth for the common life of our time.
3. An effort to substitute a new unity for the scattered fragments of knowledge into which the curriculum has disintegrated.
4. An attempt to identify the common aims which must bind together our whole educational system.
5. The common learnings needed for effective living.

These and other descriptive phrases which might be quoted give emphasis to the "common elements" and to the "unity in learning" which, it is held, must characterize General Education.

A natural result of the forces which have given rise to General

Education and a natural consequence to accepting definitions of this movement of the type suggested above are planning curricula which consist of increasing numbers of prescribed courses designed to provide all students with the common learnings which they need. Concurrent with the recognition of common responsibilities in such fields as personal living, family life, and citizenship, it is essential for education to recognize that each individual is unique and is entitled to an opportunity to develop his particular talents, interests, and potentialities. Actually the survival of democracy itself may eventually depend on the successful development of the abilities of each individual citizen.

Perhaps the development of the individual and at the same time the provision for commonality suggest two ambivalent forces. These, however, are satisfied in a basic philosophy of education as operated at Stephens College:

1. The college is committed to a program of General Education for women.
2. The central aim of the college is the growth and development of each student.

The instrumentation of this philosophy has led to the development of the following program at Stephens:

1. *Functional General Education courses* in such areas as communication skills, humanities, family life, general biology, psychology, contemporary social issues, occupational planning, and design for living.
2. *Graduation requirements,* which include work for each student in communication skills, physical education, and religion.
3. *A guidance program* under which each student's program (class and extraclass) is developed on the basis of her particular needs, interests, and goals.
4. *Teaching procedures,* within the various courses, which recognize and provide for the particular interests, talents, and potentialities of individual students.

The last listing, or procedures for individualizing instruction, are to be considered in this chapter.

There is no single "Stephens method" of teaching. Instructors are encouraged to experiment in adapting their teaching procedures to the courses they teach, to the students enrolled, and to their own particular personalities. This results in the use of widely varied methods of teaching. In the pages which follow, two courses will be described to illustrate different approaches to individualized instruction: Communication Skills, and Masterpieces of World Literature.

COMMUNICATION SKILLS

Communication Skills is a required course, and illustrates an approach to individual needs through:

1. An appraisal of the achievements and goals of each student in the skills of communication, followed by personalized individual planning of her year's work.
2. The provision of a variety of course sections and special services planned to meet her particular needs and goals.
3. The adaptation of teaching procedures by individualizing assignments for her when in a group.

Before presenting the present characteristics of the course, some aspects of its philosophy, origin, and development will be discussed.

A guiding principle for determining the objectives and content of this course, as well as of other basic courses in the college, has been that of functional education: "Work in any area is valuable only to the extent that it is functional; i.e., contributes to the development in the student's interests, attitudes, judgments, appreciations, habits, knowledge, and skills important in living, whether in the present or the future." Operationally, selection of such work is dependent upon needs in actual living, the opinion of scholars in the field, students' judgments of value, and the faculty member's interpretation of the evidence available to him.

Like other basic courses at Stephens, the Communication Skills program has drawn heavily during its origin and development upon the findings of a study by Dr. W. W. Charters in which the diaries of more than three hundred women college graduates were analyzed to determine the activities in which they engaged. Communication activities were associated with more than 25 per cent of the diary entries. These activities, as would be expected, represented both the expressive and assimilative aspects of communication. Analysis of the diaries resulted in the identification and original selection of eight types of oral and written expression for inclusion in the work of the freshman English course: (1) letter writing; (2) conversation;

(3) story telling; (4) report making; (5) speech making; (6) personal memoranda; (7) discussion; and (8) giving direction, explanations, and instructions. These were known as the "functional centers of expression" and most of them are included in the work of the present course. As early as 1932, proficiency in these activities came to be a major function through which the basic language abilities in reading, writing, speaking, and listening were studied and practiced. Later the "functional centers of activity" were fused with more specific statements of criteria to form what are at present the functionally stated objectives of the course now known as Communication Skills, in which the college woman:

Reads:
1. Directions and brief explanations with exact understanding.
2. Newspapers rapidly with understanding and retention.
3. Articles, textbooks, and reference books according to her purpose, giving close attention to details or rapidly getting main ideas.
4. Fiction with suitable skills of comprehension and rate.

Writes (with suitable form and content):
1. Social letters.
2. Business letters.
3. Critical evaluations.
4. Research papers.
5. Explanations and descriptions.

Speaks or listens:
1. Conversing according to the demands of the situation.
2. Contributing information, ideas, and questions useful in clarifying and solving the problem in group discussion.
3. Participating in the formal proceedings of organized groups in accordance with the rules of parliamentary procedure.
4. Getting information or learning the art of persuasive speech while listening with comprehension and critical judgment.

Thus the course recognizes that the most realistic tests of a student's mastery of the basic principles and skills of effective communication is performance in life situations.

Three approaches to individualization are used in Communication Skills: (1) an initial testing and placement period; (2) organization of varied course sections; and (3) utilization of individualized teaching procedures.

First, the testing period was explored. In the intermediate stages of developing the course, the staff attempted to evaluate the actual performance of each student on all objectives of the course. This process proved to be time consuming, at one stage taking as much as seven weeks. More recently the faculty has tried out various combinations of tests, both staff-designed and standardized. At present a standardized test is used in reading, and locally developed tests are used in writing, listening, and spelling. Although the staff is experimenting with the development of tests in speaking, teacher judgment of actual performance in conversation and discussion is the basis for estimating student needs in this area. Voice production needs of students are also identified by instructors, and when needed, by speech specialists.

Each student shares in the responsibility of determining her present achievement and needs in the skills of communication: she appraises her achievements and needs on a check sheet containing course objectives; she writes a paper in which she analyzes her abilities in the various skills of the course; and she discusses her needs and goals with an instructor in the placement conference which is described below. All appraisal material for each student is assembled in a permanent record folder which is used during the placement conference. These placement conferences are recognized as being so important that they are substituted for class sessions during the one-week placement period.

The purpose of the placement conference is to plan for each student a two-semester sequence of course sections in Communication Skills, selected from eleven types presently available. Although the appraisal materials in the permanent record folder are used as a basis for the conference, the instructor and the student also take into consideration any additional pertinent information which emerges from the conference. Planning for the year is thus a cooperative process which provides an opportunity, at the outset of the course, to consider each student's individual needs, abilities, interests, and goals.

The Communication Skills course is organized into sections with varying emphases, in order best to serve these needs of students. For those having the greatest need, there are sections in reading, in writing, in reading-speaking, and in writing-speaking. For those with average initial proficiency there are, during the first semester, sections in reading, in writing, in speaking-listening, and during the second semester, dual emphasis sections in reading-writing, in reading-speaking, and in writing-speaking. For those who are in the approximately top 10 per cent in initial proficiency there are special interest sections from which they may choose a year's program. The emphases in these sections are suggested by such titles as Language Habits in Modern Realistic Reading, Communication Media, Creative Writing, and Speaking-Listening Skills for Leadership. The course organization also provides for individualization through special instruction in a speech service, a reading service, a spelling service, and a writing laboratory.

The present plan of providing varying sections of Communication Skills has evolved from more than two decades of experimentation with different methods of meeting the needs of individual students. This plan does not result, as one might assume, in homogeneous grouping on the basis of native intelligence or academic ability. Rather it results in a grouping based on similar individual ranges of proficiency in reading, writing, speaking, and listening.

A few examples may clarify the operation of the plan. Mary A's initial testing results show that she is high average in reading ability, average in writing, extremely weak in speaking, and average in listening ability. In her written analysis and in the placement conference she corroborates these findings by revealing that she has read many books and enjoys them; that because of changing schools several times, she has missed much instruction in writing; and that she has had little experience in speech situations and is afraid of them. Her program is then planned to include a first semester in a speaking-listening section and a second semester in a reading-writing section. Because she is weak in spelling, her program also includes an extra hour a week in the spelling service for as long as she needs help.

Carolyn B has greater than average needs in all areas, but is somewhat more confident and proficient in speaking situations than in others. The conference reveals that reading has always been difficult for her and that she would like to have most intensive work in that area. As a result, a program is planned that places her in a reading section, supplemented by work in the reading service, during the first semester, and in a writing-speaking section, supplemented by work in the writing laboratory, during the second semester.

Joyce M's results, which her own analysis supports, indicate that her achievements in communication rank her in the top 10 per cent of the thousand entering students. During the placement conference, her goals and particular interests are explored and she chooses a two-semester sequence of Language Habits in Modern Realistic Reading followed by Expository Writing. Several years ago the staff followed a policy of excusing such students as Joyce M from further work in the course. On the assumption, however, that students with special talents need an opportunity to develop them to the maximum, the policy of releasing superior students from the course was abandoned and special interest sections have been provided.

The third approach, individualization within the classroom, is of course, largely dependent upon a teacher's ingenuity, sensitiveness to the student's needs, and interests, and upon the teacher's willingness and ability to elicit student initiative and planning. The policies which govern a teacher's work, however, can exercise an important influence upon how much he will experiment with new ideas, materials, and methods to bring about greater individualization. At Stephens, a teacher is left free to select his own materials and methods in the light of his student's problems and of his own capabilities. Accordingly, no uniform course syllabus is provided. Instructors do, however, work cooperatively with others teaching similar sections. Freedom to experiment and to try new ideas results in the use of a variety of procedures designed to individualize instruction. A few will be reported.

During work on investigative or research papers, instructors encourage students to explore fields of their particular interest. One student makes a study of Chagall and his works because of an interest developed in a humanities class. Another, a home economics major, studies the development of the home freezer industry. Still another chooses to write about bullfighting because she is planning to travel in Latin America. In a creative writing class, paintings borrowed from the art department, or recordings from the library stimulate individual reactions that eventually develop into stories or poems. In speaking-listening sections students use role playing as they apply the basic principles of communicating to the discussion of current campus or world problems. In a reading section, students are encouraged to read according to their particular interests and concerns. Upon occasion, texts used in other courses are used as a basis for individual improvement in reading and studying. These few illustrations will, however, indicate something of the spirit of course work within representative types of sections.

The staff is consistently concerned with evaluating the Communication Skills course as a basis for further improvement. Previous to the introduction of the individualized approach to teaching the course, an anonymous campus-wide inquiry form indicated that 25 per cent of the students believed the course had a high degree of value for them. On a similar form following the introduction of the individualized plan, 67 per cent reported a high degree of value for the course. On the basis of available evidence the staff is committed to the values of the individualized approach to the teaching of communication skills. Continued efforts are, however, being made further to improve and strengthen the course, and particularly the process of individualization.

MASTERPIECES OF WORLD LITERATURE

The second of the courses illustrating the approach towards both General Education as well as individualization in instruction at Stephens is called Masterpieces of World Literature. This course developed from a desire to bring the students into the library so that they might learn to love books. The anthology in a traditional literature course may be treasured, marked, and kept handy on one's shelf through life. But of lifetime value, too, is the habit of finding new treasures, of exploring books for oneself. Among the plenitude of literature courses, one in directed personal reading could not come amiss. Thus the course chosen for experiment was World Literature, because this course is not so strictly set in content from college to college as are English Literature or American Literature, and because the library could accommodate a horde of hungry readers in world literature more readily than in the literature of one nationality.

At first we did not cut loose from the anthology, but the amount of material used in it was limited, and the teacher assumed most of the work of acquainting the student with that material. Two lectures per week were devoted to the anthology. Weekly group meetings were held in the library, where the students occupied themselves with browsing or reading while the teacher went from one to another to check progress or need of help, and to consult on book selection. Individual conferences were scheduled for the entire semester, one for each student every three weeks. At this time, too, the keeping of a Reader's Diary was introduced, and that feature, though since modified, has never been discontinued. The system was not bad, and at least one teacher who assisted under that regime has continued it in another college.

Furthermore, that first system, though crushing in its demands on the teacher with a normal load, might have continued had not the interest in the individual work tended to grow and run away with both teacher and student. After all, there were other anthology courses. First, the change was to one class meeting per week, then to one week in six devoted to class meetings, then to an almost purely individualized course. That something good was lost when the class meetings went is self-evident. Poetry went less well for the average student working alone. The percentage of teacher wisdom and of fellow-student wisdom poured onto the individual lessened. But the percentages of individual responsibility for reading, for handling discussion, and for making judgments were correspondingly increased.

As an aid to improving the course, student opinion has been obtained through the use of anonymous inquiry forms. That the course rates high in interest is not surprising, but that it also rates high in student estimate of value is most gratifying. Now the course which began with 30 has grown to more than 500 students. The mechanics of individually handling so many have had to be worked out in a manner which is not too costly. The teachers have agreed to consider eight hours of conference for this course as equivalent to five hours of normal classroom teaching. Under this plan an instructor teaching the course full time has ninety-six students. The students are enrolled in sections of twelve, with three designated days of meeting per week. After the course is under way, four of the twelve come each time, and these the teacher must manage to see individually in the hour. Most teachers give the major portion of the hour to two, briefly checking progress and need of help for the other two, and reversing the order the next week. No one pretends that more conference time would not be better, and of course, teachers do give additional time.

In the library, adjacent to the literature stacks, each teacher has a conference room, the only classroom needed for this course. Here on the first day of the semester he meets the twelve students who comprise a section. He explains the plan of the course. He mentions the fact that requirement is not in terms of number of pages or number of books, but in terms of time, the item in which they were created equal. A steady eight hours per week, he says, even if one's rate be slow, insures suitable achievement for everyone in a year's time. He knows, as a matter of fact, that from approximately 8000 to 18,000 pages will be the spread, but he does not give these figures to the students, lest the weak ones be tempted to turn pages without reading. He knows that the better students will read more and of a stiffer quality than he would dare assign to a mixed class; and he knows that the poorer students will read more happily and more beneficially for not being crowded, and will improve the faster for being interested. He next shows the students how to record on the individual Records of Reading the hours worked each week, the titles of books read, and the types, nationalities, and periods of these books. Then he takes the students into the stacks to choose their first books.

At this moment the differences between individuals begin to appear. Some are confident and have good ideas for reading; some want to do what they think they would be expected to do and so choose books often beyond their ability; some have no ideas or only ideas which show a juvenile level of reading. But in general, they go away from this meeting happy, each with her own book in which she is to read what she can before the next meeting.

Two days later they return, this time bringing their Readers' Diaries. The instructor states that the diary is the student's own personal possession. She is to bring it to conference and she may read aloud from it. But it is not the teacher's; it is hers, to help her in present learning and in future remembrance. It is to contain her own comments on the books and also memorable passages. The teacher knows that the feeling of *personal diary* rather than *paper for the teacher* cancels the tendency of the unsure to copy the critics. The teacher calls attention to the book lists and to the topics for discussion. The students look at the topics, each trying to find one which suggests an interesting approach for discussing her book. Here individual differences appear again. One student can abstract immediately, and having read perhaps *Medea* and *Alcestis* can think of the comparable courage and the contrasting motives of the two women, or of the uses of the chorus in the two plays. Another, having read *Jane Eyre*, scarcely sees for herself that she could discuss dramatic events or the effect of Jane's childhood on her adult life. The teacher feels the need of working with each individually; and at this meeting or the next he divides the class into the groups of four and assigns conference days.

At the beginning of each conference the four students come to the conference room and enter their week's work on the Record of Reading, usually chatting casually about their books. Then three take their books to the nearby reading nook while the teacher talks with one at a time.

In each conference the teacher and student discuss a book whether it has been completed or is being read. The teacher takes care that the discussion is pitched on as adult a level as possible, keeping it where the student will learn yet be able to carry her full share of the discussion. Both teacher and student raise questions of interest. At first some students have only questions of fact, but others have many stimulating thoughts. However often the teacher may have discussed a particular book, the discussion wears a new face each time; for with the other half of the conversation new, the teacher's own half perforce becomes new.

One girl, for example, extracted paragraphs from *Wuthering Heights* and from *Windswept* to show how key words made one lonely place suggest turmoil, and the other suggest peace. One student used the topics "The Person Who Succeeds" and "The Person Who Fails" to discuss Levin and Anna Karenina. Another after reading *Prometheus Bound* wrote a short poem in which the modern family sits in comfort before the hearth, deaf to the cry of the fire giver which still rings in the cold outside. Another compared five Greek women, Clytemnestra, Iphigenia (of Aulis), Phaedra, Antigone, and Alcestis in their attitudes toward death. Some students choose to write original paragraphs imitating the style of the author. Presumptuous as this exercise may be, it promotes a feeling for individuality in style. Sometimes the diary entry is an essay expressing an emotion or idea which the book thrust up on the reader, or more rarely a painting or a short musical composition. Some sincere creative work has grown thus out of reading. Such discussions and diary entries give the student practice in thinking through the book.

Before the conference ends, teacher and student usually find themselves thinking of other books to read, and since the way out leads through the literature stacks of the college library, they may examine four or five books before the student decides which to take. This handling of books stores up ideas for future reading.

At one time there was the thought that conferences might be more effective if teachers had before them data from a test. With student help, a comprehensive acquaintance test was worked out and for several years was given at the beginning and at the end of the year. Tests made elsewhere have also been used, but interesting as results were, the teachers found that the tests are little real help. Through conversing individually about a subject so revealing as one's reactions to literature, the teacher soon has the feel of the student, her reading ability and potentiality, and her mind and character texture.

Occasionally there is an influential visiting lecturer. The year André Maurois gave his series on Tolstoy, 235 students read *Anna Karenina* and 96 read *War and Peace*, a record for these always well-liked books. Sometimes the four in a group talk together, going back over their diaries and making reading suggestions to one another.

There are recordings of poetry and plays, and listening rooms are conveniently available. The Stephens Playhouse, with its ten excellent productions each year and its open door to rehearsal and sound booth, is the invaluable aid in dramatic literature. But the aids which actually make the course possible are the generous librarians and the library literature shelves always stocked on request with multiple copies of much read books. In each girl's Reader's Diary she keeps lists of books, topics, and questions for discussions about these books. Meanwhile teachers and students are building a file of photographs and articles relevant to the books often read, or any other subjects or topics related to them. And deviations from the individual work are relatively few. In general the opportunity to go off with her own book and read at her own rate is zealously cherished by the student.

However, there is ample informal discussion on campus. That the girls talk about their books in the residence hall and read excerpts to one another, calling across from bed to bed, is clear as the year goes on and one girl after another attempts to identify to her teacher a book which she wants to read because a roommate or a suitemate kept making her listen to muddled bits until she wants to read the book and get it straightened out for herself. On an anonymous questionnaire 98 per cent said they talked about their books in the hall, 80 per cent "frequently." It appears that they talk about their reading more when they are reading different works than when all read the same selections from an anthology. The pleasure of telling something that the other does not already know operates.

Book lists are an inevitable outcome of a course like this. The first book list came from the students themselves. One spring shortly before graduation the students decided to list and describe briefly the books they had enjoyed most, so that they could have one another's suggestions to guide their reading after graduation. A student committee put these lists together, choosing what they thought was the best comment for each title. They were so much interested in the work that it seemed worth while having it printed for them; and they were more than pleased with their pamphlet *Enjoyable Reading.* It is interesting that some of the favorites on that list have been favorites persistently, though teachers and students have come and gone. *Les Misérables, Forsyte Saga, Brothers Karamozov, Kristen Lavransdatter, Hamlet, Medea,* and *Antigone* for example, were favorites on that list and still are. But others, like *Arrowsmith,* which then were high on the list are so no longer. The list went through several editings at the hands of succeeding student committees and later was for a time included in *The Reader's Diary.*[1] However, the inadequacies of many comments eventually came under faculty disapproval, and the old *Enjoyable Reading* is now replaced by a list called *Recommended Reading* made by the faculty—sounder than the old list, though student gusto in using it is probably less. As each school year progresses and the student becomes convinced that the teacher really does help her choose books suited to her, responsiveness to teacher suggestion grows. But there is no suggestion more generally potent than that of her own age group, and the initiated teacher is careful at the first of the year not to give a favorite book to an inadequate student lest she kill it for others; for the student who tries to read a book she cannot understand usually says to another student: "That is a boring book." And she is telling the truth, for of course it is—to her.

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[1] Zay Rusk Sullens, (ed.), *The Reader's Diary,* Lucas Brothers, Columbia, Missouri, 1952.

Another student-made list, *Topical Readings,* bids fair to retain its usefulness. Each student listed her college courses, and under each course named the books she had read in Masterpieces which contributed material relative to that course. The list, revised from time to time, has been used to some extent by teachers in other courses, particularly in history and in sociology. The teacher may suggest books for Masterpieces because of the tie-up with another course, since the teacher has before him the curriculum of each student. If a student looks at a book in the light of issues raised by another course, so much the better.

A certificate is given at commencement time for unusual achievement, and a special reading list is designed to accommodate students working for this award in literature. Variety of type and nationality is the basis for this list, from which the student desiring honors must read fifty books representing at least twenty-five of the categories, and then stand an oral examination under two teachers.

Useful for reference is a chronological list of selected well-known authors from different countries. Since the course by its nature tends to neglect chronology, devices must be used to supplement the student's generally weak consciousness of this factor.

All the book lists, though subject to continued revision, are now for convenience bound in *The Reader's Diary*. The spread of reading suggested by these book lists suggests in turn one of the prime requisites of a teacher of this course. He must be a reader, a person with a sniffling, snuffling curiosity about books. Many people well prepared to teach a graduate course in medieval drama are not teacher material for this course because their reading is not habitually inclusive. On the other hand, the person with the wide reading is the better for having also been disciplined in scholarship. In a comparatively free reading program there needs to be always stress on substantiating what one says about a book, on being clearly analytical. So the search for teachers is among those habituates to discipline in literature who are also habitual rangers to every compass point of the old "realms of gold," and scuttlers for good new metal.

Live interests in music, art, and theater are also preferred qualities of the teachers for this course; for we find the arts so related that sensitivity in all gives more assurance of genuine sensitivity in the one. Moreover, illustration from other arts is often useful. Grounding in languages and in history is advantageous in this as in all literature teaching. And obviously flexibility is here a *sine qua non.*

Sometimes there are low periods in teaching this course, times when the dream of helping some girls learn to read at an adult level with delight and with awareness seems futile. But near the end of the year one teacher after another gives way to some spiritual gloating, because young people who through weeks of personal book discussion have become important to him are changing and growing before his eyes. He knows that other courses and time have contributed to the change, but he knows also that the year of association with good reading has borne its share. If the book is within her ability, a student does not come away from a good book unchanged. The teacher has the satisfaction of knowing too that those of his students who may major in literature will not be handicapped by lack of broad reading backgroud and by lack of habits of independent judgment. And he can confidently hope that most of those who do not major in literature will nevertheless remain habitual readers.

So whatever variant practices come and go, it seems now that the individualized method will remain, and that the Stephens literature teachers and students have moved into the library to stay. It is in this library where the subjects for General Education are found by the individual.

The literature course, and the course in Communication Skills, tackle the crucial dilemma of American education today, the conflict between the mass education for *all* youth and the individual education for *each,* and provide one solution. Any experimentation which throws light on this problem is significant when it proves to be vital. It is such a setting—of vital education—which these two courses here described have provided for both the divergent and the common needs of General Education.

Individualization is indeed a must in General Education.

ROBERT C. POOLEY

CHAPTER VI. *COMMUNICATION COURSES*

PRELIMINARY OVERVIEW

THIS chapter discusses what kinds of courses illustrate the teaching of the language skills in General Education. Without implying that the goals of General Education may not be achieved in the standard, traditional freshman English courses of many colleges and universities, the decision was made to draw illustrations from the courses in communications which form a part of total, specially designed programs of General Education. In some institutions this course has become the requirement for all students, as at Michigan State College. In others the course is taken by students who elect or are placed in a special pattern of general studies, as at the University of Wisconsin. In a few others, the pattern of General Education has so absorbed the communications area that the students can scarcely be said to be taking a course, but are rather aiming at language achievements in an integrated pattern, as at Reed College.

Again the term communications is by no means uniform in its meanings and overtones. The reader of *Communication in General Education*[1] cannot fail to be struck by the range of meanings given the word in the contexts of that volume. To this reader, at least, the range seems to be from acceptable written English exposition to a philosophy of life based upon symbolic processes. No such range of meanings is here contemplated. The writer takes *communication* to be the word standing for the interchange of ideas by the use of language, employing the recognized skills of reading and writing, speaking, and listening. Even within this modest limitation of the term there is room for variety of approach and emphasis.

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[1] Earl J. McGrath (ed.), *Communication in General Education,* William C. Brown Company, Dubuque, Iowa, 1949.

One positive and uniform agreement may be stated first: all programs of General Education which have come to the attention of this reporter express a firm conviction of the importance of skill in the use of language for communication and give the results of careful thought and planning for this area a prominent place in the descriptive literature of the programs. Even those which at first glance seem to lay less stress on communication by having no first-year course in language skills point out emphatically, as does Colgate University, that the students are from the beginning concerned with adequate expression in speech and writing, even though the formal course is postponed to the second year. The purposes of communications courses may be summarized thus: (1) to teach the skills of language for effective use in speaking and writing, reading and listening (the emphasis on these elements varies widely from one course to another), (2) to develop a language consciousness and conscience so as to speak and write with responsibility for one's meaning, and to read or hear with critical insight the meaning of others, (3) to develop an appreciation of the English language itself through its history, its current forms, and its potentialities as a vehicle of communication.

Probably no single course develops to the full all three aims as summarized above. Indeed, differences of emphasis are sufficiently pronounced as to form the general plan of this chapter, which aims to describe the several patterns which have enough elements in common to constitute a trend. Each individual course will have elements pertaining to all the groups, yet its plan and emphases, as observed by this writer or recorded in printed descriptions, seem to justify placing it in a single category for descriptive purposes. With apologies in advance, then, for possible misinterpretations, the writer finds three broad types of organization for the teaching of communications in General Education. These are:

1. Courses designed primarily to integrate the basic elements of communication.
2. Courses designed primarily to integrate one or more of the elements of communication with other subject matter, as for example, with literature or art.

3. Courses designed primarily to develop linguistic values and responsibilities as well as language skills.

To these three divisions this chapter will add a fourth, whose purpose is to show what particular devices of instruction have been developed in the various groupings of courses to meet the educational problem of wide differences of ability in the students who are in the courses. Since teaching devices arise from the need to carry out purposes established in the planning of a course, it seems reasonable to discuss the teaching of communication in terms of the organizational trends of such courses.

THE INTEGRATION OF ELEMENTS OF COMMUNICATION

The development of General Education programs arose from movements of revolt and reform in college curriculum planning. Introductory courses in general were felt to be too narrow, too technical, too much concerned with content, and too little with the student. These concepts developed from many angles in the volume *General Education.*[2] Freshman English courses, in particular, were criticized for narrowness of scope (only one language skill, writing, emphasized), for reading programs not closely related to communication (literary values stressed rather than reading-writing as integrated activities), and for teaching which failed to motivate the student to any sense of linguistic form or responsibility. From such criticisms came the trend in General Education to design communication courses which would develop skills in more than one element of communication, show the student the interdependence of such skills, and to develop in him, one way or another, an attitude toward language which would render him actively concerned with accuracy not only in form but in the broad uses of language as a social medium.

For purposes of illustrating teaching in this type of courses the patterns developed at the State University of Iowa and at Michigan State College are used.[3] Inasmuch as the general plans of these courses, statements of aims, and techniques of administration are available in the references cited, they will not be repeated here except as they may be needed for specific connection with teaching procedures. The emphasis of this presentation is upon the kind of teaching done in these courses, and the special techniques developed for such teaching.

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[2] *General Education,* Fifty-First Yearbook of the Society for the Study of Education, University of Chicago Press, Chicago, 1952, Part I.

[3] Cf. Earl J. McGrath, *Toward General Education,* The Macmillan Company, New York, 1948; also Earl J. McGrath (ed.), *Communication in General Education,* pp. 18-36, 74-88.

The Iowa program in Communication Skills is set up to secure competence in reading, writing, and speaking. The goals are four: (1) that instruction be as individualized as possible; (2) that instruction in the several skills be integrated rather than isolated; (3) that instruction be skill-centered; (4) that instruction be directed toward practical ends. The course begins with an extensive testing program to determine the abilities of entering students. These tests include English skills, content in broad areas, vocabulary, reading rate, word meaning and distortion, principles and tools of communication, an expository theme, and an argumentative speech. From this testing program students are assigned to one of three courses: an accelerated, one-semester course, a two-semester main course, or a course in fundamentals.

Work in the fundamentals course is individualized to meet deficiencies of students, so that no further sectioning is necessary. In the main course and the accelerated one, students are further sectioned into special emphasis sections. This, a distinctive feature of the Iowa program, insures that while each student will go through all the instruction planned for the course, he will get particular emphasis upon one phase in which he needs to make progress. Students requiring no particular emphasis are put into general sections. This kind of organization facilitates achievement of the goals announced for the course. It is equally true that such a program can be effectively used only where the course is basic and required of large numbers of students to permit such latitude of sectioning.

Instruction includes some foundational lectures, but principally classroom recitation, discussion, exercises, and tests. Minimum performance in all sections requires three exercises on study-reading methods, three on reading rate, five on reading comprehension; in speaking, two organized recitations, two two-minute talks, three four-minute talks, one six-minute talk, one participation in a discussion group, and one voice recording; in writing, a total of at least 5000 words distributed among five single paragraph papers, three longer themes, one library paper, two class themes, two sets of examination-answer papers.

Integration among the skills of communication is secured by the use of topic or project assignment. A problem introduced by means of a lecture or a statement in the syllabus requires reading in books and magazines. This reading is discussed in class, and forms the subject matter of talks, discussions, and debates. From the study and analysis of topics thus explored in the classroom are derived the subjects for writing, whose organization and emphasis can profit from the oral analysis of the subject. Student work in both speech and writing is analyzed in the classroom, sometimes with the aid of duplicated or projected compositions, and speeches recorded on tape.

To motivate the course and retain interest several devices have been developed. A special course library is maintained, with books easily available for problem study, and for aspects of the various media of communication. A course magazine is published once each semester to encourage writing, and a radio program encourages speech activities. The exchange of classroom instructors, especially for midterm tests, has motivated better performance, to meet the objective standards of a visiting critic.

Iowa has developed an excellent program in clinics for special needs. Instruction altogether seems well adapted to attaining the ends of an integrated pattern of language skills.

Written and Spoken English at Michigan State College went into practice in 1944, but it has undergone extensive changes in the past near-decade. As at Iowa the course is a basic requirement for all students entering as freshmen. Since Michigan State College is primarily a technical institution, the course is designed to provide fundamental skills in reading, listening, speaking, and writing for students whose use of such skills will be for utilitarian rather than artistic ends. A revised syllabus for the course (1948) lists nine objectives stated in practical terms toward practical ends.

Instruction is divided between lectures and classroom work, with clinical assistance for deficiencies in reading, writing, or speaking. The lectures, one a week, form the listening laboratory in which the students' ability to listen with discrimination and to take effective notes is exercised and tested. Classroom instruction is arranged into units to emphasize certain skills and to secure an effective integration of the communication skills. After an introductory unit stressing the college environment, the student in turn studies sentence and paragraph organization, the planning of extended papers and talks, definitions, thought processes, and aspects of meaning. The second term (quarter) emphasizes report writing, both as a skill and as study of how language is used to transmit information effectively. Report writing includes use of the library and the study of topics for writing and speaking from other basic courses. The third quarter deals with persuasion as a means of influencing behavior. Advertising, sales talks, discussion of controversial issues, and letter writing for specific purposes make up the teaching devices. Emphasis in this term is upon responsibility in the use of language, with practice in all the fundamental skills as related to this responsibility.

Considerable unity and integration of instruction result from the fact that the teachers of Written and Spoken English form a single department and are thus able to give individual attention and investigation to basic communications. Like that of Iowa, this course is organized and taught so as to bring the various elements of communication into an integrated pattern.

INTEGRATION OF COMMUNICATION WITH OTHER SUBJECT AREAS

Basic or core programs of general studies serve to bring the benefits of introductory liberal education to large numbers of students, but because of the large number served and the options which must be allowed, such programs must sacrifice some elements of close integration among the General Education courses. On the other hand, those programs of General Education which are planned for all students of a small college, or for a small group in a large institution, may achieve a higher integration of courses in the total program. To illustrate instruction in communications in such programs, the communication courses of the Pennsylvania College for Women and of the University of Wisconsin are selected.

In the organization most favorable to the development of integration between language skills and other fields of knowledge the attention of the faculty is focused as much upon the aims and achievements of the program as a whole as upon the success of individual courses. This concern for unity of program has characterized the General Education plan of the Pennsylvania College for Women since its earliest stages of planning. The entire faculty was involved in one way or another in the planning of the program, and every course was studied and approved by the entire faculty before its adoption.[4]

Therefore every effort is made to relate skills of communication to the specific content of parallel subject matter courses, but the elements of communication are dealt with separately. There is a one-year, two-credit-per-semester course in English composition which is closely correlated with the course in the History of Western Civilization. Readings and ideas from the latter course provide the content for paragraph writing, précis exercises, the planning, outlining, and writing of longer exercises, and the use of resource materials for expository reports. With reliance upon a uniform common background of material shared by all his students, the composition teacher can give full attention to the skills of writing, at the same time strengthening the students' grasp and comprehension of the content of Western civilization through the discussion, planning, and writing involved in the writing course.

A parallel course of one year, two credits per semester, is offered in Effective Speaking. This course is correlated with Principles and Problems of Modern Society, a sophomore level course in social relationships. From the materials of this course are derived the content to be used in the development of short talks, discussions, round tables, and debates. Thus the content of a subject matter course is highly integrated into the learning of speech skills, with resultant profit both to speech itself (since the student does not have to prepare special content for his speech practice) and to the content course, in that its principal ideas are reviewed and analyzed in the processes of speech instruction. It is interesting to note in this program that the integration of a specific language skill with a particular content course provides a practical teaching integration no less effective than that provided by the integration of the language skills themselves.

At the University of Wisconsin the major emphasis in communication is upon the art of writing, with a secondary goal of attaining some background in the nature and uses of language for communication. A one-year course of two credits per semester differentiates the aims by means of titles; the first semester course is called The Theory and Practice of Writing, and that of the second semester is The Nature and Function of Language. The central core of work is composition through both courses, with the emphasis upon skills in the first semester and upon uses of language for various communicative purposes in the second semester. In both semesters the materials for writing are drawn from the concomitant General Education courses.

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[4] W. Hugh Stickler, *The Organization and Administration of General Education,* William C. Brown Company, Dubuque, Iowa, 1951, pp. 71-85.

In the teaching processes, much emphasis is placed upon the writing of impromptu compositions in the classroom. At the opening of the course most students require the greater part of a fifty-minute period to plan and compose a statement of 120-200 words. By the close of the first semester many students complete such an exercise in fifteen minutes. Growth in mechanical accuracy, sentence accuracy and variety, and basic paragraph structure are closely geared to these practice impromptu compositions. Although a textbook is used as the means of learning skills and improving deficiencies, little recitation occurs. The text materials are applied directly to writing exercises in which the student has the opportunity of demonstrating his mastery of the assignment in its practical application.

The principal long paper of the first semester is a study of local folklore or the survival of folk customs. Prepared upon topics furnished by the course called Early Man and His Society, these papers are first evaluated by the English staff as expository writing, and are then passed on to the social studies instructors for content evaluation. Throughout the first semester the topics for impromptu writing are drawn from the content courses of the same semester. Fairly early in the course there is a unit devoted to the taking of useful lecture notes. Following classroom instruction, the students attend a particular lecture in a content course, write well-organized notes which are inspected and evaluated, and then prepare a précis of the lecture from their notes.

In the second semester the writing emphasis is upon the longer report. Teaching procedures include a guided tour of the library, guidance in the preparation of notes and source materials for a report, instruction in outlining, footnoting, and preparing bibliographies, leading up to the writing of a report of 1000 words or more in three class periods of fifty minutes each. The topics are furnished by a course called Medieval and Renaissance Culture. When the paper has been completed in the third writing period, it is evaluated by the English teacher as exposition and is returned to the student with corrections. He may then correct it or rewrite it if he wishes to submit to the humanities course for credit. In similar fashion, though with part of the work done at home, the students complete a book report in the field of physical science and a factual study of some aspect of medieval history. These exercises tie together in a practical way growth in writing skills and the performance of useful exercises in courses taken at the same time.

The study of language is carried on by means of readings in books like Hayakawa's *Language in Thought and Action* with classroom exercises in the study of how language is used in advertising, in editorials, in news, and in other expository and persuasive writings. Students practice types of language use in classroom impromptu exercises. In this program the focus is upon writing, and particularly report writing, as an important set of skills to develop in close integration with the subject matter studied in concomitant courses. No specific provision is made for speech skills in the basic program, but many students elect an introductory speech course.

COMMUNICATION THROUGH THE STUDY OF LANGUAGE ITSELF

Nearly all the communications courses in programs of General Education give some attention to the nature of language itself and the use of words for the exchange of meaning, but the type of course described in this section takes such material as the core of its organization and teaching. Two such courses are those at Drake University and at the University of Minnesota.

The English Department at Drake University set out to create a General Education course in English which would contribute to the total integration of the program by means of a scientific understanding of language. From such an understanding three integration factors emerge: (1) since symbols occur throughout the educative process, the nature of the symbolic process and the effect of symbols upon behavior become fundamental to all learning; (2) laws describing linguistic phenomena derived from the observation of English are applicable to other languages; (3) the inductive method, established in the sciences, and growing in status in the social studies, can be effectively used in the study of language.[5]

From these premises a new kind of course was developed which would combine the study of language itself with practice in the elementary skills of communication.

This course opens with classroom discussion of the means of expressing feeling and communicating experience, leading to the study of language symbolism. Students are given assignments to study language in use: children learning language, language used in business, etc. Word meanings are studied, especially as the same word moves from one context to another. Next are studied the uses of words to classify and define, with oral and written classroom practice. These and other word studies prepare for instruction in the writing of reports, in which meaning and the affective uses of words may be further studied. The means by which emotions can be aroused is next studied, with detailed analysis of certain assignments which apply language to practical ends.

Up to this point in the course (about fourteen weeks) no attention is paid to usage or correctness. Now usage is studied, with attention to usage in language behavior. Levels of language are observed, and some translations from substandard English to standard English are assigned.

A final integration is achieved by reviewing the history of the English language from its sources in Indo-European background to the deviations of contemporary English in various geographical and cultural settings of the present world. This summary of experience with language highlights the factors of growth and change in English.

The communication program at the University of Minnesota is administered by an interdepartmental committee, and in method of teaching combines the features of a course integrating the elements of communication with those of a course stressing linguistic information. Social aspects of communication are fundamental, including the recognition of the social significance of the content and methods of the mass media of communication.

Because of the quarter system, the course is divided into three parts. In the first quarter the attention is upon language itself as

[5] Cf. Earl J. McGrath (ed.), *Communication in General Education,* pp. 89-102.

the system of symbols for communicating meaning. Classroom instruction centers upon types of writing and speaking which emphasize clarity of thought and effective use of language. As a further training, the sentence outline is featured. The second quarter shifts the emphasis upon language as it is used to influence behavior. Class exercises include some work in logic, in argumentation, and in psychological factors in persuasion. Writing features the "brief" as a means of training in logical and psychological arrangement of ideas. Each student is required to analyze two selected radio programs: a news commentator and a group discussion like the Chicago Round Table, which he follows through the quarter. In class there are also taped programs of contrasting methods of news broadcasting, with an analysis of the uses of language.

The third quarter centers attention on the channels of communication to the public. Large numbers of newspapers and periodicals are studied to discover editorial policy, content, style, prejudice, and slanting if present. Four or five student panels are formed in each section to make a more extended investigation of one of the media of communication, culminating in group authorship of a term paper.

Thus by divisions of emphasis, and by a wide variety of classroom exercises featuring communication in society, the student develops the skills of communication in company with a study of the nature of language as a vehicle of communication and as a means of influencing social behavior.

TEACHING DEVICES TO PROVIDE FOR INDIVIDUAL DIFFERENCES

One of the persisting problems of introductory communications instruction is the wide range of abilities exhibited by entering students, which vary from near illiteracy to professional writing and speaking competence. Even among the general run of students there is enough range of ability to justify efforts to provide some differentiation of instruction. Four methods have developed in general practice, which are used singly, or sometimes in combination. These are: (1) kind of exemption; (2) alternate courses; (3) ability-level sections; (4) clinics in specific skills.

General exemption from an introductory course in communications is less widely practiced now than formerly. Most students are expected to take at least a one-semester accelerated course. However, a number of institutions have provision for the exemption of competent students. Such students may take a more advanced course or may be excused from any work in the communication skills.

Because of the integration of the total pattern of studies in some programs, exemption from the communications course would diminish the desired integration. To meet this difficulty, one General Education program has developed a plan of unit exemption. The skills of communication are divided into units of five or six weeks duration. Students are pretested, and if competent to a high degree in the skills tested are excused from class attendance until the end of the unit, when they return to take a posttest with the entire class. Exemption is limited to those who show competence in specific areas; although they are excused from some weeks of class attendance they perform all the study and writing exercises assigned to the class and take all the examinations. Given such freedom, superior students tend to come to class on the days when the subject will be useful to them and to stay away from unnecessary repetition. By this device the student is prevented from boredom if he is competent, and the less able can be drilled with greater personal attention by the reduction in the size of the class.

The forming of sections for various levels of ability is a practice common to the communications programs dealing with large numbers. A number of programs provide for three or four levels of ability by this means. Initial testing includes basic English skills, vocabulary, reading speed and comprehension, general college aptitude, and composition writing. The number and kind of tests varies widely from one program to another. The typical adjustment after testing is:

Group I.	Exempt from basic communications.
Group II.	Placed in accelerated one-semester course.
Group III.	Follow the regular one-year program.
Group IV.	Must first complete a preparatory semester course before admission to Group III, often without credit.

Teaching in the sections is adjusted to the ability level. The accelerated course includes more exercises in the same period of time, and frequently uses a text and readings at a level above the standard course. At least one institution uses special emphasis sections in the regular course for further differentiation. One section thus would stress reading, another speaking, another writing, etc., without neglect of the basic work in any area. Sectioning by ability levels does not solve all the problems of basic communications, but it does prevent waste of time for drill and elementary work for competent students.

The problem of the less competent student seems best met by the creation of clinics. Several communications programs have developed excellent clinics in the fundamental skills to help the floundering student pull himself up to class level. Clinics are created for writing skills, speaking skills, and reading skills. Usually the student needing the help of the clinic is referred to it by his section teacher. In some cases he attends the clinic in lieu of class attendance; in other cases the clinic is additional. Teaching in the clinic is individualized. The typical clinic consists of a room with space for one or several instructors; it is equipped with books, materials, and apparatus of help in the particular skill. The student is tested, given a goal to work for, and provided with materials for his own self advancement. He practices the skills he needs, tests himself, and continues until he feels ready to be tested by the director of the clinic. When he has raised himself to reasonable competence in the skill for which he was referred he leaves the clinic, but may return for special help whenever he needs it. For larger institutions the combination of ability sectioning with clinics for the special skills seems to be the best solution to the problem of teaching effectively different levels of students. In smaller colleges the sections may be small enough for the instructor himself to adjust the work to levels of ability, and he may by office conferences assist the poorer student to advance in needed skills.

Except for the accelerated classes in some institutions, adequate provision for the high-level student seems lacking in many programs. Excellent techniques have been developed for meeting differences of ability at the lower levels, and clinics have demonstrated their effectiveness in salvaging the doubtful student. But by and large, General Education in communications courses has given more thought to achieving a minimum level of competence rather than a maximum. The superior student is either pushed forward by exemption or dragged along in classes too elementary for him. So long as communications is considered basically a series of skills, no one can object to pushing forward the superior student as rapidly as he can go. Certainly he should be released from repetitious drill. But in the courses featuring linguistic knowledge, uses and abuses of words, and other semantic elements, the superior student could pursue studies of this sort at a high level. It is a goal to work toward in the communications programs.

WILLIAM C. HUMMEL

CHAPTER VII. *DISCUSSING BEFORE WRITING*

THE freshman English course, the only widely required course in the twentieth-century college curriculum, comes up for continual discussion at staff meetings dealing with curriculum reorganization principally because it attempts to span too much and asks the teacher to carry too heavy a load. Its nature (in thus reaching into so many phases of literature and communications) made it a natural for the General Education program started at Kansas State four years ago. Everyone recognized when the fireworks (which the term General Education provokes) started, that freshman English was a pioneer in the General Education movement.

In describing the traditional course, the important adjective should be: *general*. Not only did this apply in our land-grant college, but in all the other institutions, as well, from coast to coast, from border to border. For instance, one mid-western institution used a textbook containing five Shakespearean plays, the King James version of the Bible, and a translation of the Odyssey! Other textbooks have included such wide range as: grammar, rhetoric, logic, philosophy, ethics, and even such incongruities as the writing of a business letter side by side with that of a short story. What general aims did the teachers of these textbooks have? They hoped to furnish each freshman with plenty of subject matter (including library books with the textbook), a writing skill to meet all demands not only of the English class, but those in other clases as well. The textbook must meet the needs of many who come with insufficient grammatical heritage. It must help answer all the problems of this basic course which confront the often befuddled and discouraged teachers.

But to reorganize this course appropriately presented a challenge to the committee appointed for that purpose at Kansas State College. Should it be a service course? To date it had cut through and across departmental lines towards this end. This must continue. Should skill in writing be emphasized? When the answer came "yes," it was agreed that oral communications should be developed in the department of speech, while written communications should be kept in the department of English. How large a part of the course should be given over to reading and acquaintance with the library? In a land-grant college such as ours the aims tend to be more technical and scientific than cultural, even while the enrollment in the liberal arts has for several years surpassed that of the other schools. Our graduates, therefore, find increasing need of acquiring the writing skill. It would be good preparation to see what others find interesting material to write about, and to look at the styles of good writers. Certainly a freshman should be encouraged to explore the library! However, since the General Education program included courses of wide coverage, such as reading masterpieces of literature, it would not be necessary to include a comprehensive study of such areas. Literature per se could be left to a course designed for it alone. The freshman could be guided toward books on writing, but in preparation before that toward books on thinking and reasoning.

In the department of English, we were helped in estimating the utilitarian needs (rather than the artistic) of the entering freshman by considering his theme of exposition written in the freshmen week. If we read such a sentence as this, "What I lik best is going out and play a good game of basball," we knew that this shows not only illiteracy but also the inability to think logically or read intelligently. We must first teach such a student how to read and think. Should a freshman demonstrate technical weakness of grammar or syntax, we agreed that extra work should be given him individually to supply a partial remedy.

The committee spent a good deal of time on the challenge: How do we motivate the student to write? Usually the biggest hurdle is subject matter. To advise a freshman (frantically hunting for a subject) to turn to E. B. White or John Steinbeck to see how brilliantly each of them wrote on the simplest subjects was useless.

Most likely his retort would be, "But I'm not White. I'm not Steinbeck." To write a list of possible subjects (interesting to the teacher as he keeps the student in mind) on the blackboard motivates good writing only by accident. With a poor student, recognizing the exercise character of such an assignment, it may lead to collapse; with a superior one, to glib writing. Yes, the matter of motivation and subject matter had the committee stumped!

This knotty problem in organizing Written Communications led the members of the committee to some worth-while points of view. Agreed, this course had an important function in the General Education program on the campus; without doubt it should be designed to practice skills more far-reaching than implied by "correct written English." The writing should be expository in character to fit the needs of occupational rather than cultural areas. In order to create for the student a satisfactory climate for such informative writing, he must first exercise his aptitude for logical and analytical thinking. When he has mastered the technique of clear thinking, he is ready to relate it to logical and effective writing. In fact, the committee members took for granted that most bad writing is more a symptom than a disease. If the climate is favorable, they assumed, the disease might disappear.

The following outline (for a favorable climate for writing) shows how the student should be given practice in:

1. Argumentation in class discussion, toward experience in organization and support of evidence, with recognition of unstated assumptions.
2. Critical reading of assigned expositions, looking for definite points of view on controversial subjects, discussing these in class.
3. Writing, the reporting and explaining of his own opinion and conclusions reached following his own critical reading of the assigned expositions along with the class discussions on them.

To supply the needs for both the course and the climate, two members of the English department were asked to prepare a reader of controversial topics starting with the familiar, ending with the unfamiliar.[1] These topics were taken from within and without the college, from the present and the future, ranging in type from humor magazines to philosophical essays. From the easy readings about college life the book proceeds to the more abstract projects of adult living concerning economics, politics, and philosophy. They served the dual purpose of furnishing materials for classroom analysis and discussion, and convenient points of departure for written assignments.

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[1] Earle Davis and William Hummel, *Readings for Opinion,* Prentice-Hall, Inc., New York, 1952.

This procedure led the committee toward the technique of discussion with a book, *The Analysis of Propaganda*,[2] for the student to examine before practicing its suggestions in the classroom. The accent is on teaching the student how to listen intelligently, to think logically, and to express himself orally for the sole purpose of better thinking. To stimulate meaningful, pointed, and refreshing discussion would call for tact and clever guidance on the part of the teacher, with some knowledge of basic rules in logic on the part of the student. Exercises and illustrations in logic appear in the book just mentioned. There is no attempt to turn the course into one of logic, but the important points of logical analysis are clearly brought out, including: the distinction between the inductive and deductive process, the main patterns of syllogistic reasoning, and the semantic fallacy of too closely identifying words with events.

Once this step was worked out, the next, integrating the logical discussion with the written exposition, was not so difficult a task. To help the student as he turns to writing, one standard "liberal" handbook is included in the suggested book list, *Writer's Guide and Index to English*.[3] This furnishes a uniform background for all the students, acquainting each with the concept of functional grammar, the levels of usage, factors of growth and change, and the uses and abuses of words. For the backward student special sessions of individual conferences are arranged to review grammar or syntax as needed.

This liberal credo is brought into the first part of the term to stimulate the student to think about the development of language and to form a lively springboard for writing acceptably. To those students strongly conditioned against "English" with connotations of formal grammar or the sentimentality of nineteenth-century poetry, the discussions arising out of the newer and more liberal developments of our language are most refreshing. Then, too, like most people, freshmen enjoy talking about themselves. A laboratory in which they can exchange patterns of regional characteristics, or idioms, is most satisfying. For most freshmen, the concept of grammar as a morality is boring, but as a changing process is fascinating. When one sees that even he may be a force in that process, the idea becomes even more exciting! While exchanging information about personal language habits, while discussing the pros and cons of acceptance of the new patterns, lively discussion is stimulated. This discussion clears the air and actually lays the foundation of thought as the student prepares to put his own thinking on paper.

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[2] William Hummel and Keith Huntress, *The Analysis of Propaganda*, William Sloane Associates, New York, 1949.

[3] Porter G. Perrin, *Writer's Guide and Index to English*, rev. ed., Scott, Foresman & Company, Chicago, 1950.

It is not easy to know how right the committee was in its assumptions, or its reorganized plan for the course, but after trying these out for almost three years, its members have some idea of the course's values. Since classroom experience is the final valid test of any course, it is not easy to draw any final conclusions. However, certain impressions and tentative conclusions have been reached by the administration of the college and the committee who planned the course:

1. Such a course demands a highly competent staff.
2. Student interest in the general approach is apt to be quite high.
3. The emphasis on analytical skills is for most students entirely new and presents even the best students with a serious challenge.
4. The writing situation provides improved "motivation" when compared with the previous method of selection of subject matter.

Even though student interest in the general approach of Written Communications is quite high, there is a carryover of resistance from the traditional freshman English course in a land-grant college, where the course is often looked upon as an F-trap. This again puts the emphasis on teaching. To handle this resistance demands someone with the "great teacher" quality. It is a cliché to suggest that the most experienced teacher ought to bear the burden of the freshmen work in English, while the enthusiastic young instructor fresh from graduate school can take care of the majors without doing them much permanent harm. There is more than a kernel of sense to this proposition, granted this course is really a difficult one to teach effectively. From the teacher it calls for humor without coddling; adequate remedial help for the backward student, without taking time from the good ones; careful attention to concreteness, with the elimination of generalities. The spotlight is now on the teacher. No longer dare a teacher write, "This theme lacks organization." Now he must put down concrete words suggesting how the student may develop better organization.

The "great teacher" quality also calls for talent to lead discussion and to turn the spotlight on the student. It is permissible for the teacher to ask leading questions; to point up arguments; even to make an intelligent summary at the end. But occasionally, as the class progresses in discussion tactics, he must be willing to relinquish even this role of chairman to the capable student. At all times the student should be encouraged to talk, but should be kept on the subject, and within accepted time limits. The teacher must be on the alert to keep the free discussion from degenerating into an aimless bull session. As moderator he should (with courtesy and tact) create an *esprit de corps* of good sportsmanship, sharp thinking, and democratic sharing of ideas. To conduct a class in this manner takes infinite patience, not a quality always found among even the best teachers.

Because of this and the wide variety of subjects brought into a discussion class, some good teachers take refuge in confining all the talk to the assigned readings. When this is done, the teacher is tempted to take further refuge in merely quizzing the student on the subject matter; or he resorts to using his desk more or less as a pulpit from which he expounds his own views about the essays. If this does not take place, class discussion is quashed at the outset. The teacher has stolen the spotlight for himself. Perhaps the student will amass more subject matter per se by this method; but he will not have had the experience of thinking for himself.

Yet the real purpose of this or any course in General Education is to help the student think for himself. The teachers of Written Communications at our college have found, as already mentioned, that the subject matter most conducive to self-thinking is the liberal credo found in the Porter Perrin book. Though this introduces personal opinions about language habits, it does not demand personal expression of feelings on life issues. It is when the focus reaches the vital concerns of living that the teacher meets with greatest student resistance. Freshmen do not like to make definite commitments, which fact supports the statement of a national magazine that the postwar generation is without strong opinions on anything. Our teachers further suspect that the easy response of "yes" or "no" represents a parrotlike politeness of taught response rather than a thought-evoked expression of genuine feeling. Often the student will use the phrase, "on the other hand," merely to dispense with the topic quickly in order to avoid any head-on feeling or thinking about it.

For the most part, however, teachers report that with experience in the discussion technique the student seems to gain courage to express himself honestly, even as he listens to the others. He thus gains confidence in his ability to think; finally he will even challenge the statements of his classmates. With his challenge he must produce concrete evidence of his own point of view. This makes him more and more aware of the need for exact meanings.

To make a statement express exactly what he wishes he must first have a complete understanding of words; he must be able to classify and define them. To transmit information correctly, he must have the right word—just any word will not do. To find the exact word for his purpose leads him to examine the word with infinite care and discrimination. Take the word "fact," for instance. He is forced to search for an acceptable definition. Even though he fails to find one that satisfies him, it is certain that he will never again use the word lightly.

Add to this the student's examination of nontechnical presentation of basic syllogistic patterns, of the relationship between inductive processes, and you have the complexity increased. Though it is all tricky business, it is worth while. As the student learns to choose with discrimination, he uses words which more nearly fit the ideas he wishes to express.

In the midst of this exploration, the teacher (prodded by the semanticists) reminds the student that a word is not a thing! To simplify for the student, the teacher goes on to explain that an argument may be an entirely verbal structure with not a single cognate in the world of events. Of course, this could be baffling even for the teacher, but far more so for the student. Nevertheless it is true that somehow the usual percentage of freshmen do master the complex materials of the course, hopefully to their lasting benefit.

Of course the freshman is most concerned with present benefits. This concern begins to take form for him the moment he starts to write. No one dare, in Written Communications, gripe because he has nothing to write about, since everyone has the same thing. Again the question pops up: Is he motivated by this knowledge and by the subject? At least he has a place to start. Not only has he a topic but he has one which has been exposed to debate by others and to thoughtful examination by himself. Perhaps the subject is not really the most exciting in the world to him: For instance, he may be asked to write a cogent defense of radio as an educational force, whilst being much more interested in labor-management relations. Nevertheless, even though it is not his first choice, he has some background for the subject; he does not come to it cold. Besides he comes to it with organization towards writing well in hand. He has been led to think about it in advance. Nor has this just been his own thinking; it includes the arguments of others. This takes some of the kinks out of his own thought processes. He has been urged to think logically with his classmates, discussing different angles of the same subject. Though the skeletons behind such papers are awkwardly apparent, they are superior to the rambling type which too often results from such a wide-range assignment as "500 words on a subject of your choice."

In line with the supplementary importance of subject matter to the major objective—the writing skill—is the character of the test given at the end of this course. It consists of a two-hour examination in which a 450-word paper (of acceptable correctness and coherence on a subject chosen from a list of twenty-five titles) is written by the student and corrected by two instructors other than his own. If the paper is of passing grade, it is then marked as the course instructor sees fit; but if it is failing, the instructor in charge may pass the student only by showing satisfactory cause. Note that this examination does not test required reading matter; attention to this phase is given only by instructors who may feel moved to stir up laggards in their own sections. So far, the severity of this examination, of a theme written on the spot, has not caused any serious disturbance in grade distributions. Average students and better will probably be able to meet any reasonable standard set for them; and there is good reason for setting a high one.

The committee which set up this course at Kansas State College awaits with interest a possible good evaluation of the new course organization when, next year, the first freshmen (who took the course) will take college-required English Proficiency examinations (of the essay type) which have been and still are required for graduation. In the past, failures in the senior test have far exceeded failures in the freshman English course, a good indication that many students do not retain as graduating seniors the skills they acquire as freshmen. Should any significant change for the better show up in such comparative figures, it could be interpreted as a satisfying straw in the wind. Such change would certainly indicate that emphasis upon basic habits of thinking stimulates a favorable climate for effective writing. If this is so, it will have justified the committee's course of action in trying to produce effective writing through more effective thinking. This remains to be proved!

Though the introduction of General Education into the curriculum at Kansas State College has lightened the load for the teacher of the course in Written English (now called Written Communications), the load is still heavy enough. The course must even now aim to achieve a wide range of objectives: remedial for the student with poor heritage of grammar or syntax; basic in presenting the techniques of discussion with emphasis upon thinking for oneself; skill designed for effective writing acceptable not only in this course but in other areas of the General Education program and providing the usual service course for other departments and schools. The final evaluation of the course will not be found in the student's score on the written examination of the senior year, but in the usefulness of the course in life situations he encounters following graduation. This evaluation, unfortunately, cannot be easily made by those who taught the freshman his course, Written Communications.

Part Three

THE NATURAL SCIENCES

CLEMENT L. HENSHAW

CHAPTER VIII. *PHYSICAL SCIENCE: A WAY OF THINKING*

THE "problem approach," as a way of organizing science courses in General Education, provides a means of exploring in several fields of science without introducing an excessive burden of subject matter. At the same time it is particularly fitted to bring out certain aspects of science as an enterprise which are coming to be recognized as valuable objectives of science teaching. This approach bears some resemblance to the "case study" method in science as advocated and developed by former President Conant of Harvard University and his associates, but there are distinct differences. The case studies, at least so far, are concerned with scientific problems of an earlier epoch in the history of science. Their treatment relies almost entirely upon the detailed study of original documents, translated when necessary, and carefully annotated for the purpose. In the problem approach as developed at Colgate University, certain problems from an earlier epoch are used, and a few original documents are studied, but there are also included several problems which are still the target of current research, with solutions yet to be discovered. Perhaps the main distinction between the two approaches lies in the contrast between the careful exposition by the lecturer and the reading materials of what actually happened in a certain period in scientific history, in the case study; and in the problem approach, presenting a scientific problem to students in terms which they can grasp, and encouraging their participation in working out a solution in class discussion.

EVOLUTION OF THE PROBLEM APPROACH

How the problem approach came to be used can best be shown by a review of the evolution of General Education science instruction at Colgate University during the past twenty-five years. In the decade of the 1920's the science requirement, as in most other liberal arts colleges, consisted of two or more years of science, of which half must include laboratory work. When the Colgate Plan of Education was introduced early in the 1930's, this science requirement was shifted to a pair of one-semester *survey* courses, organized in the physical and biological sciences and required of all freshmen. The thinking back of this change was that the standard introductory courses of the separate science fields were designed for future specialists and were less suitable for the majority of students who were not planning to concentrate in science. Furthermore, it was thought that separate science courses were not so successful in presenting a broad view of the sciences as unified survey courses would be, particularly if recent developments, simply presented, were introduced to maintain interest and show the connections between the artificially differentiated branches of science.

For a decade the survey method was followed with considerable success. Then the interruption of the normal pattern by World War II, which happened to coincide with a change of administration, provided a logical point at which to evaluate the entire Colgate Plan. Some required science instruction was recognized as essential in a liberal education, but there was increasing awareness of the rather shallow penetration which the science surveys were making. These courses had tried to be selective in the topics included, but there were so many which seemed important or interesting that the number inevitably grew. Perhaps the greatest weakness was the major attention paid to the memorizing of the vocabulary and generalizations of science, along with a few basic principles, all presented in somewhat dogmatic fashion. Time was not taken, or was not available, to acquaint the students with the kind of thinking that commonly takes place in science. Other questions were raised. What conception were the students getting of science as a discipline, as a way of getting knowledge? What appreciation did they derive of the point of view of a scientist, of how he thinks and acts? Were they aware of any of the impacts of science upon society, or how society influences the progress of science? The evaluating committee felt that most of these questions would be answered negatively, based upon experience with science surveys.

The task of meeting these additional objectives without exceeding the eight semester hours occupied by the science surveys seemed to be an impossible assignment. Superficial treatment of topics could be avoided by developing them to greater depth. But this and any attention devoted to a comprehension of the scientific process obviously required more time. The conflict pointed clearly to a substantial reduction in the number of topics. In an attempt to make the most of the stringent time limitations, the problem approach was suggested as a means of dovetailing several objectives rather than working at them separately. If the students could focus attention on a particular scientific problem, they would of course need relevant information of facts and principles, but at the same time perhaps something of the nature of scientific investigation could be brought out by treating the topic as a problem, by considering *how* the knowledge was gained rather than merely what the results were. Furthermore any desired degree of critical thinking and scientific reasoning could be introduced by controlling the depth to which the problem was examined. Admittedly the breadth of coverage of the survey would have to be sacrificed, but perhaps a judicious selection of problems could be made so the course would contain representative samples of the important areas.

Attractive though this approach sounded at first, the organizing committee charged with the task had many misgivings about how it could be carried out in practice. It seemed to them that current unsolved problems in science in most areas would require a background of subject matter equal perhaps to the graduate level. They felt that the only problems which were of an appropriate difficulty were those solved in an earlier epoch in the history of science. But the solutions of these problems are widely known and the point of view of the original investigator is foreign to the student and difficult to convey. A course composed of problems of this type required of all freshmen, and taught by a staff who are not experts in the history of science, seemed a dubious venture.

Some resolution of these difficulties developed after a time. It was gradually recognized that in certain areas of science such as astronomy and geology, there are contemporary problems, incompletely solved, which might lend themselves to use at the freshman level without too extensive a background of specialized knowledge. These problems frequently are taken up in books published for the educated layman or form the subject of current popular science articles. If these problems can interest the layman in science and be treated in a manner within his grasp, they should be appropriate for college freshmen. The nontechnical expositions selected for the students to read should be ones which make a serious attempt to examine the nature of the problem and the efforts at finding a solution, rather than those which merely glamorize the story.

To build the course entirely of unsolved problems in science was felt to be both unnecessary and unwise. The mathematical or technical knowledge needed for most current problems would disqualify them and prevent a reasonable sampling of problems from different fields. To treat a problem which has already been solved a different approach was developed. Instead of starting with the historical setting, the problem is posed and the students are encouraged to explore with the instructor how that problem might be attacked today, using the data and observations of other investigators but not their inferences and reasoning. In classroom discussion, under the instructor's guidance, the students examine the data, consider different explanations or hypotheses, search for confirming evidence, and in other ways try to see how solutions are obtained and why the current one was adopted. After the students have struggled with the arguments and have justified the current solution in their own minds, they are more interested to look back to see how the problem fared in history, and they have more sympathy for the misconceptions entertained by great minds in the past.

ORGANIZATION AND CONDUCT OF THE COURSE

The new problem approach to science teaching was only one feature of a reorganized "core curriculum" of required general education courses adopted by the Colgate University faculty in 1945. As a part of this plan it was suggested that the science portion be in the form of a unified course in Natural Science in which relevant information from either the physical or biological sciences could be brought to bear on a problem which demanded it. A common example of such a problem which cuts across many fields is *photosynthesis*. Botany, chemistry, and physics all make important contributions to its understanding.

But as practical matters of organizing such a unified course in natural science were faced, real difficulties were encountered which prevented carrying out the proposal. The most serious of these was the problem of staffing. This was met during the decade of the surveys by training teachers from one of the physical sciences to be conversant with topics from other physical science areas, and correspondingly in the biological sciences. The problem approach was going to expect the teachers not only to deal with certain topics to a much greater depth than in the surveys, but also to conduct their teaching in a novel manner. To be able to handle problems in any area of physical or biological science for a unified course is not only a great deal to ask of the staff available; it is quite possible that relatively few teachers possess the interest and native ability for such a combination of intensive and extensive preparation.

The logical solution to this difficulty seemed to be the organization of two similar courses, each of a semester in length, one dealing with problems stemming from the physical sciences and the other with problems from the biological sciences. By allowing the students to take the courses in either order, the teaching loads could be balanced throughout the college year. There were other advantages to this plan. At any one time, the number of students for whom some special teaching aid was needed (lecture or laboratory equipment, library books, etc.), was half what it would be if all students were taking up the same problem at once in a unified course.

The kernel of the problem approach for teaching science is opportunity for discussion. Accordingly plans were made for students to meet three times a week in groups of about twenty-five each, and once a week in a general meeting. In the discussion sections, the values of the problem approach are largely lost if the instructor adopts the conventional attitude of the expert, the authority, who is there to convey knowledge and explain it to the students. On the other hand, the nondirective technique which is so successful for certain objectives in the social sciences has in most cases proved ineffective. By an approach somewhere between these two extremes the instructor can help the student to decide what data or observations are relevant to the problem under discussion and how they were obtained by the authorities consulted. Then he tries to encourage them to infer plausible explanations or hypotheses and propose tests or checks on their ideas. Further search in books for factual confirmation may be needed at this point. If the problem is one for which the solution is known, there is no need for the instructor to lead them immediately in this direction. There is some value in their exploring unsatisfactory answers first. By the time they have come around to the "correct" explanation, not only have they a better comprehension of the problem and the adequacy of its solution, but they have experienced at first hand some of the groping and perplexity so common to the experience of scientists but so seldom revealed in descriptions of their findings.

The weekly general meeting in which all sections join has been found useful for a number of purposes. For almost any problem there is background information which is either valuable or essential, that can be presented most effectively by means of a lecture accompanied by demonstrations or with the use of selected motion pictures. It is more efficient to do this with a larger group provided it does not exceed the size which can see well and pay attention. That number in our experience is 130-160 students. Sometimes the entire group can also benefit in the general meeting by a résumé of the steps of reasoning that have been followed in class discussions during the previous week. Such a practice is especially valuable if all sections will be given common tests and examinations.

The fourth meeting per week in many science courses is a laboratory session. Various proposals for laboratory in the science cores were considered, but any plan for regular operation was turned down. The main reason for this decision was the difficulty of designing laboratory activities which were in harmony with the objectives of the course and at the same time relevant to the material under discussion. After a few months of operation, it was recognized that some laboratory activities were important and could be provided, although space for this purpose, particularly in the biological science course, is inadequate. On two or three occasions during the semester, the discussion group in biological sciences adjourns to a nearby room for such things as examining a leaf under the microscope or for probing into a sheep's heart to determine its structure. In the physical science course the general meeting is replaced on certain occasions by a laboratory type of experience. Early in the semester the students are taken outdoors, one section at a time, to study the evening sky. Later they go in buses on a geology field trip. And when they are discussing the problem on the atmosphere, they spend a period in the laboratory where at some stations there are instruments to be examined and at other stations several small problem situations for them to investigate. There are a number of possibilities for this type of activity which remain to be explored.

It is apparent that no single text exists which is suitable for a course of this type. For any given problem the students need background information presented, if possible, without prejudice to any particular theory or scheme for its interpretation. Source readings of this type are uncommon, and must be sought in a variety of places. A few original writings, or translations, are desirable when the history of a problem is referred to. The procedure which has been found satisfactory is to obtain multiple copies of the desired sources to be placed on reserve in the library, one for every ten students. In addition, a manual has been prepared which the student purchases. This manual contains certain expository material for each problem and also reproductions of some current and historical science articles. There are virtues in having the students consult more than one source. It comes as a shock to many of them that on current unsolved problems the experts can arrive logically at conflicting conclusions!

Just as discussion is the kernel of the problem approach, the instructor is the germ which gives it life. The student comes to the first meeting of the course like a dry sponge, rather stiff and ready to absorb a generous supply of fluid knowledge. The instructor's task is to cultivate an attitude of inquiry, not just for scientific facts but for sleuthing out these facts. Unless he possesses some of this curiosity in a natural way it is difficult for him to convey it to his students.

There are two aspects to the training of an instructor for teaching by the problem method. The first and more obvious is that he must be adequately prepared in the facts and principles that arise in connection with the problems used in the course. Since several of these are likely to be out of his field, he will need to do a considerable amount of background reading the first time he handles a discussion section. The second aspect of his training is that he must be made conscious of the problems *as problems*. He must distinguish easily between fact, inference, and hypothesis, must recognize relevant and irrelevant arguments, and must be aware of how successfully discarded theories can account for most of the facts in a problem.

No preparation for this kind of a job is as effective as actual participation in the teaching of a section. But there are means for helping the person in the unavoidable first time through. One of the best is to make it possible for him to audit a section conducted by a seasoned instructor during the semester prior to his service. This will reduce the burden of extra reading for him when he actually starts teaching. A second method for aiding his preparation, and a valuable means for keeping an active staff alert, is to conduct informal weekly staff meetings to which apprentices are invited. In these sessions currently unsolved problems can be discussed at the instructor's level, where the specialist present interprets the latest investigations, and from which the rest of the instructors acquire an "informed" background. It is also in these sessions that discussions on methodology belong, where the solutions of different problems are compared and where the instructor begins to realize how many different methods are involved in scientific investigation in spite of frequent repetition of some types of reasoning. Enthusiastic participation in such a staff seminar by an instructor will do much to assure successful conduct of a section of the course.

THE PROBLEMS

While numerous problems in science are unsuitable for use at the freshman level because of complexity or the amount of technical knowledge required, many have worked well. Those currently included in the science core courses are as follows:

PHYSICAL SCIENCE

Does the earth travel around the sun, or the sun around the earth?
How did the solar system originate?
What is the interior of the earth like?
What was the origin of the Carolina Bays?

Why does the temperature of the air decrease as one goes to higher altitudes?
What is the significance of the periodic table of the elements?
What is the source of atomic energy?

BIOLOGICAL SCIENCE

How does life depend on light?
How is the circulation of blood controlled?
How is prenatal development regulated?
How is skin color inherited?
Are acquired characters inherited?

No two problems in the above groups are treated in quite the same way. In some, considerable emphasis is possible upon methodology and the scientific way of trying to gain understanding of the natural world. In others, the question is raised as a means of focusing attention, and a large share of subsequent discussion is devoted to providing comprehension of current knowledge on the subject. At the same time, it is possible for an alert instructor to point out smaller problems and the steps involved in their solution. The problem of the origin of the solar system is most successfully treated by considering chronologically the various hypotheses which have been proposed, the degree to which they explained the facts, and the weaknesses which developed as more precise observations or calculations were made. In spite of being unhappy without a final confirmed answer, the students have rated this problem as the most interesting of the physical science group.

The problem of the Periodic Table is dealt with historically, although it is focused on Mendeleyev's work. After a week devoted to tracing the evolution of certain important concepts of chemistry such as the notions of an element, of conservation of mass in a chemical change, of an atom, and of atomic weight and the problems of its determination, the students read an abbreviated and annotated translation of Mendeleyev's 1871 paper. In its discussion particular attention is paid to how he developed his periodic system and upon what assumptions it was based. The third week devoted to the problem is used to examine some of the parallel streams of scientific investigation upon which it was ultimately possible to build a "grand conceptual scheme" for the structure of atoms which also could account for the empirical relations Mendeleyev so ingeniously set forth.

In many General Education science courses today, it is common practice to devote some time to the solar system and its organization. Although in a survey course this is largely descriptive, there are a number of institutions where the history of man's efforts to work out a satisfactory scheme for celestial phenomena is studied in some detail. A different approach to this subject has been found which has certain advantages of enlisting more active student participation and not requiring such extensive preparation in the history of astronomy on the part of the instructor. This problem is particularly effective at the beginning of the course, for it requires a minimum background of specialized knowledge, and is becoming of increasing interest these days when space travel is such a frequent discussion topic. Because the approach used in this problem is applicable for certain others, a detailed description of it is set forth below.

The problem is presented by the question, "Does the earth travel around the sun, or the sun around the earth?" To the students this is no problem. They have already been told not only the answer to this question but some of the elements of how the rest of the solar system is organized. And they have been led to believe that the system has been fully studied and understood by the experts to a high degree of accuracy. The instructor points out that the students' knowledge is based merely on secondhand information, and he proposes that as a class activity they endeavor to work out a solution to the question themselves. He explains that they may properly consult authorities for whatever observations they need, since these observations are capable of independent verification, but all inferences, mechanisms, hypotheses, or conclusions derivable from the observations will be made by the student and instructor, and not borrowed from others.

At this point it is frequently possible to whet their interest by raising a similar but simpler question, "Is the earth flat or round (spherical)?" The students are quick to present various kinds of evidence in support of the round earth idea such as ships disappearing over the horizon, photographs from rockets, or circumnavigation of the globe. The subsequent discussion is always lively when the instructor points out implicit assumptions (e.g., light travels in straight lines) in the inferences drawn from the observations, and shows how some of them could be accounted for on a flat earth hypothesis, at least until further study and measurements are made.

The instructor then attempts to convey a careful description of various motions in the sky, including the sun. The students are taken in small groups to view the evening sky where in only a few minutes the shift of the stars can be discerned. For motions involving longer periods we must rely on description given by the instructor or those found in certain sources,[1] which the students read in the library. Visualizing a "celestial sphere" with oneself at the center needs practice, but they soon see that the hourly motion of the stars, sun, and moon from east to west can be accounted for on two assumptions or hypotheses. Either the entire celestial sphere is rotating around the earth or the earth is rotating in the opposite sense. The latter idea is less difficult to visualize mechanically but it needs the confirmation of some deductive test. A rotation of once a day is hardly enough to make a person dizzy. It might show up, though, in certain situations where moving bodies are partially free of the earth for limited periods. Here we let them read about various deflection experiments, and they see a Foucault pendulum change its direction in the afternoon lecture. This confirms qualitatively the hypothesis of a rotating earth. We therefore assume that it rotates once every 23 hours 56 minutes in order that the stars can remain fixed. *Any* revolution of the stars about the earth raises additional problems.

Our problem by this time has become one of finding a satisfactory mechanism for all the celestial motions, not just that of the sun. The next step is to consider the leftover motions not fully accounted for by the spin of the earth. The most noticeable is that of the moon (though many city-bred students are ignorant of it!), which nightly shifts eastward substantial distances in the sky, taking 27⅓ days to return to the same position in front of the background stars. It is a natural inference that the moon revolves around the earth once in that period, although no simple confirming test of this, like the Foucault pendulum, is available.

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[1] Lancelot Hogben, *Science for the Citizen*, W. W. Norton & Company, New York, 1951; J. B. Sidgwick and W. K. Green, *The Heavens Above*, Oxford University Press, New York, 1950.

The sun also shifts relative to the background stars, about one degree a day. This is not directly observable but can be inferred from the changing pattern of stars rising after sunset or before sunrise. By analogy with the moon it is proposed that the sun also revolves around the earth, with a period of one year. Its orbit, like that of the moon, must be inclined about 23° to the celestial equator.

Sometimes a clever student suggests that the *earth* should be assumed to revolve around the *sun* once a year instead. A common answer of the instructor is that such a scheme should certainly be investigated before we are through, but the student made no such proposal with regard to the moon and it is sensible to follow through an obvious and plausible hypothesis first.

Attention is next directed to the planets whose motion upon the celestial sphere is not uniform like that of the moon and sun. They progress eastward most of the time but at certain intervals they appear to stop and move westward, then move eastward again. The character of these retrograde loops is made clearer to the students by having them plot the paths on polar coordinate paper. Successive telescopic photographs of Mars and Venus are examined. These show not only large and progressive changes in apparent diameter but phase changes as well. If one discounts the thought that they are pulsating in size, it is evident that they must change their distance from the earth by large amounts. The large thin crescent images of Venus which are seen near the middle of its retrograde motion, together with the fact that Venus never is seen more than 48° from the sun, suggests that Venus is circulating around the sun while the sun is traveling about the earth. A home-made model helps to illustrate the arrangement.

A similar scheme for Mars, except that it loops the earth as well, is shown to account quite adequately for its change in appearance as well as its retrograde motion. So with the proper choice of relative distances and periods, all the planets can be pictured as circling the sun, which in turn carries them around the earth. This model, it might be pointed out, is somewhat different from the old Ptolemaic system of epicycles and deferents.

Here the students are baffled. They are confronted with a scheme which apparently is consistent with all the positional observations and yet it is contradictory to what they were formerly taught and have firmly accepted. A few begin to wonder if they had it wrong all this time! But the instructor warns that they do not yet have sufficient evidence to transfer the model from the status of a hypothesis to that of an accepted theory. Other observations must be sought. Furthermore the whole scheme must square with what we know about the behavior of bodies and how they influence each other, i.e., dynamics. Here we assume gravitation as an experimental fact, and propose it as the force which keeps these bodies from moving off into space on tangent straight lines. Also we explain (by using a demonstration) that one body never revolves about the exact center of another. Instead they both revolve about their common center of mass. On this basis, and without the use of equations, we can show how our provisional scheme of the earth being the center is in contradiction with the simple laws of dynamics. That is, if the planets are to follow paths centered close to the sun, the earth must exert little influence upon them and hence be much less massive than the sun. If that is so, the center of the earth-sun system must also be close to the sun, which requires the earth to revolve around a point close to the center of the sun instead. This leads, as well, into the problem of distances between the earth and other solar bodies.

This contradiction requires substantial revision of the hypothesis, although the parts describing the rotation of the earth and revolution of the moon are unaffected. It becomes necessary to find a different explanation for retrograde motion of the planets, and the result is the familiar heliocentric system. Finally there are two critical deductive tests, aberration and stellar parallax, both due to motion of the earth in its orbit around the sun. These last effects have been observed but are extremely minute, of the order of a few seconds of arc or less, and historically were not influential in the acceptance of the heliocentric system.

After spending two weeks wrestling with various phases of the problem as sketched above, the students are then asked to read something of its history. To keep the entire problem from using too large a fraction of the semester, this historical review is admittedly sketchy. But we have opportunity to discuss Aristarchus' insight, why his ideas failed to be accepted, Copernicus' revival of the heliocentric approach, Tycho Brahe and why he rejected Copernicus' new scheme, Galileo's and Kepler's important contributions, which culminated in Newton's mathematical synthesis. The prediction and discovery of Neptune and Pluto serve both to give additional confirmation of the heliocentric theory, and to show how some discoveries are made in science. Students have indicated in various ways that such a historical summary, after they have grappled with the problem themselves, is both interesting and valuable.

EVALUATION OF STUDENT ACHIEVEMENT

Formulating suitable questions for tests and examinations, whether of the objective or free-response type, is the greatest headache of a course which asks a good deal more of the students than remembering a body of organized knowledge. In a real sense, the students recognize as the *empirical* objectives of a course those mental tasks they are called upon to perform for grading purposes. The problem approach is used in the hope that students will gain a better understanding of what scientific thinking is like and how scientific problems can be or have been solved. The memory of what some of the steps were, in a problem discussed in the course, is of some value, but the ability to recognize such steps in an unfamiliar situation is a surer test that the course has been a living experience for the students.

Accordingly, test questions are used which ask the students, for example, to decide whether given statements are fact or hypothesis; or whether given facts are consistent with, inconsistent with, or irrelevant to a given hypothesis. In reference to historical material, questions depend less upon accurate memory of dates and events and more upon placing significant events in proper sequential relationship. Sometimes it is possible to present excerpts from a popular article on a scientific problem and test for recognition and understanding of important steps in the attack on the problem, and how they are related.

Somewhat under 50 per cent of testing time is devoted to free-response questions, requiring either brief statements or longer expositions. Here again, one objective of the course is that the students be able not only to think in critical and logical fashion, but to express these thoughts orally and in writing. This objective is further supported by asking each student to write one or more papers during the semester which are analytical in character rather than descriptive or expository.

APPRAISAL AFTER SEVEN YEARS OF OPERATION

The ideal kind of evaluation of a course of this nature would be some fairly reliable measure of how a person's attitude and way of thinking have been altered ten years after the experience of the course. Not only are the practical problems of such an evaluation nearly insurmountable, but there is serious doubt that much would be discovered. One-fifth of a person's intellectual experience for nine months, even if vivid and arresting, is unlikely to survive in recognizable form after dilution by an additional nine years. However, the more subjective means of judging, by questionnaires and unsolicited testimony, indicate that many students have developed new comprehension of critical thinking in science and have been surprised to find how generally successful in explaining the facts many "wrong" hypotheses are. They have also developed greater respect for earlier scientific efforts. In spite of the emphasis upon critical thinking and solving problems, there is reliable evidence that the students enlarge their fund of scientific information to a surprising and gratifying degree.

At the same time certain weaknesses are being recognized. It is doubtless true that both the physical and biological science courses would get certain ideas across better if more extensive use were made of carefully designed laboratory activities. The physical science course has been criticized for too little use of quantitative thinking, a practice adopted in deference to the limited mathematical ability of some of the students. Some of the students point out that the problems in physical science fall too largely in the domain of theory, and though effective for the objectives of the course, pertain too little to his everyday life and thought. These difficulties and their resolution are administrative in character and reveal no essential weakness of the problem approach.

The instructor who has taught either course a number of times recognizes a different problem, namely, the conflict between coverage of subject matter and developing the critical thinking of his students. He often feels a pressure to get on, to keep up with the schedule, and is tempted on occasions to replace the discussion session with a "lecturette" to cover more ground. Such a relapse is dangerous, for the student changes his role from a probe to a sponge, and the latter role is intellectually easier and more familiar. This pressure of content seems strongest in the physical science course and may require a reduction in the number of problems treated. But such a conflict is bound to arise in many types of general education science courses besides the problem approach, and the only protection against a reversion to dogmatic teaching of subject matter seems to be eternal vigilance.

W. HUGH STICKLER

CHAPTER IX. *BIOLOGY IN RESPONSIBLE LIVING*

> It seems to me that the most important problems of general education revolve around the attitudes, knowledge, and teaching skill of the instructor. The teacher is the keystone of a general education program.
>
> NATHANIEL CANTOR[1]

THIS chapter deals not with the subject content of a course in biology in General Education but with the teaching of biology as it contributes to achieving the goals of General Education. Nor are we concerned here with the teaching of technical courses essential to professional training of biologists. We are concerned with teaching general biology to students not planning to major in science, courses that contribute to the student's equipment for effective personal and family living and responsible citizenship in a democratic society.

The chapter is divided into two parts: first, we shall discuss the kind of job to be done; second, we shall consider the kind of teacher to do the job.

THE JOB TO BE DONE

For the purposes of this discussion we shall assume familiarity with the philosophy of General Education. That philosophy indicates inclusion of science (including biology) in any well-conceived program of general studies. Of the many statements concerning the place of science in General Education perhaps none is better than that of Krauskopf.

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[1] "The Teacher in a General Education Program," *J. Gen. Educ.*, vol. 6, no. 3 (April 1952), pp. 210-211.

> When a student questions the importance of science in his own personal general education program, we commonly try to reassure him by pointing how large a role science plays in the daily lives of ordinary Americans. By such an answer we do not mean that he should become intimately acquainted with the multitudinous gadgets with which science has surrounded him, nor that he should do scientific work himself, nor that he should read scientific articles more abstruse than newspaper or magazine reports. What we do mean is that throughout life he will be hearing about new inventions and new theories; that as a voter and taxpayer he will help to decide such currently important questions as whether research should be government-supported and whether some kinds of research should be shrouded in secrecy; that as a business man or public official he may be called upon to allocate funds for research, to recommend for or against hiring a scientist, or to discuss problems with a scientist; that he will find his thinking in economics, politics, philosophy and religion subtly but powerfully influenced by science; and that he will hear much about possible applications of the scientific method to economic and social questions. Because science will influence his life in so many diverse ways, he needs to know something of its methods, its goals, its capabilities and its limitations. In brief, he should have an intelligent appreciation of science, much as he needs an appreciation of art and statesmanship.[2]

Turning specifically to biology, we need only to listen to the questions of students to find justification for this area in a program of General Education. "I have diabetes: should I marry and have children?" "How do doctors bring 'dead' people back to life again?" "Can tuberculosis be inherited?" "Why do I get airsick in an airplane?" "Does insanity really run in families?" "What causes leukemia and what can be done about it?" "Will we ever have positive protection against polio?" "What are the essentials of planned parenthood?" "Do children inherit their parents' personalities?" "What causes cancer? Is it inherited?" "How important is the Rh factor?" "How did life begin on the earth?" "Can a person believe in evolution and yet be religious?" "Why are so many people dying these days from heart attacks?" "What can you tell me about human reproduction?"

But some educators will say, "Why bother with interdepartmental courses in General Education? These things can be taught in the regular courses." That is possible but at best it is incidental. Most introductory science courses have lost their liberalizing influence. The center of gravity has shifted from student to subject matter. Thus an introductory course in biology (zoology or botany) is not apt to contribute significantly to the goals of general understanding. It tends to be treated professionally, the first step along the "torturous technical highway to specialization"[3] in that field. Experience shows that the goals of General Education are more likely to be achieved through well-planned, interdepartmental courses in biology under a single broadly trained, competent teacher.

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[2] Konrad B. Krauskopf in *General Education at Mid-Century: A Critical Analysis,* Robert D. Miller (ed.), Florida State University, Tallahassee, 1950, p. 74.

Actually the field of biology offers exciting opportunities for effective teaching. Here one deals directly with the materials of the course, examining, studying, interpreting information firsthand rather than through some intermediary agency. Here too one has the advantages of experimentation, a most valuable asset in vitalizing teaching. Finally, in biology there is the distinct advantage that the "materials" of the course are living organisms. In studying the characteristics of living things the student, himself a living organism, is studying the essentials which make him what he is. If the biology course lacks for interest it cannot be the fault of the materials; it can only be the fault of the teacher.

What then is the job to be done in teaching biology for the general student? Let us look at some basic requirements.

First, there is the important matter of objectives. Following visits in a large number of colleges and universities, the late Paul Klapper[4] indicated that his most indelible impression was the characteristic aimlessness of classroom instruction. The hours were crammed from bell to bell with transmission of facts which frequently could and should have been gleaned by the student himself. The notes of the professor became the notes of the student without going through the mind of either. Again and again Klapper observed classes where the teacher apparently did not know why he was teaching what he was teaching.

No teacher ought ever to go into a classroom without knowing what he wants to accomplish both immediately (in the day's lesson) and in the long haul (the entire course). Hence it is essential that the objectives be clear.

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[3] Sidney J. French in *General Education in Science,* L. Bernard Cohen and Fletcher G. Watson (eds.), Harvard University Press, Cambridge, 1952, p. 17.

[4] Paul Klapper in *Preparation of College Teachers,* Theodore C. Blegen and Russell M. Cooper (eds.), American Council on Education, Washington, 1950, p. 42.

The teacher's philosophy of General Education and his own hierarchy of values will determine his objectives. These in turn will influence his choice of subject matter. If the teacher accepts the philosophy of rationalism he will select one body of content.[5] If, on the other hand, he subscribes to the philosophy of neohumanism or instrumentalism he will select a quite different body of content.

It is not our purpose here to prescribe the content of the General Education biology course. As Nathaniel Cantor observes, "Only fools and fanatics, the one without knowledge and the other without humility, rush in with completed blueprints."[6] Nevertheless, we make a few general observations on this subject of course content.

One thing seems certain: survey courses are not the answer. They have been tried and found wanting. They try to cover too much material. As a result they tend to be superficial. Rather the teacher of biology in General Education must select from the vast storehouse of knowledge of life science those ideas and principles which have significance in our democratic heritage and which have functional meaning in the lives of students.

That brings us to the key requisite in the selection of content: the subject matter must have *relevance* for the student who is perhaps having his last formal experience in a class in life science. We now live in an exciting world of mechanical hearts and mechanical kidneys; bone, blood, and eye banks; still beating hearts of dead creatures; still living tissues from animals months or years dead; fascinating knowledge about nutrition; new fossil finds; mold products which kill a multitude of pathogenic organisms; hormones which can work wonders; hybrids which vastly increase the yield of farm products; new concepts of inheritance; and ever-increasing knowledge about the human organism, its evolutionary origin, its structure, its physiological functions, and its relation to its physical and biological environment. A new and completely unimagined world has been revealed to us during the past few decades. That is the world in which our students live. It is the world we should help them understand.

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[5] National Society for the Study of Education, *General Education*, Fifty-First Yearbook, Part I, University of Chicago Press, Chicago, 1952, pp. 20-45.

[6] *The Dynamics of Learning*, Foster and Stewart, Buffalo, 1946, p. vii.

Yet what does the traditional biology course offer? It usually begins with the concept of protoplasm, discussed in chemical and physical terms completely outside the experience of the student. Next it discusses the concept that this protoplasm "is organized into cells with a nucleus at the center." Then come rather detailed studies of the physiological processes, again discussed in chemical and physical terms which the student may or may not understand. Here follow extensive surveys of the plant and animal kingdoms, large portions of which content does not interest or benefit the general student. Some courses neglect the human body almost entirely. Others include it, but the discussion is apt to begin with the equivalent of, "The human body consists of a head, a trunk, and limbs." When the course is drawing to a close two topics of intrinsic interest to students may be discussed: heredity and evolution. But by this time the damage has been done. How can such merchandizing of information help students become better human beings, wiser parents, or more effective citizens?

Not all courses in biology are this bad, but we hope we have made the necessary point. Are we being fair with these students who will not be scientists? One wonders if a careful and honest analysis might not reveal that in the average biology classroom we are teaching a multitude of things which really do not matter in the lives of most students, while at the same time neglecting many things which matter very much indeed. The conscientious teacher of biology in General Education needs to do some soul searching on this problem of what to teach.

This brings us to the problem of method. How shall we teach what we teach? Here we avoid the temptation to go into that age-old question of lecture versus discussion. Suffice it to say that the teacher should use whatever methods he can employ most effectively.

One thing seems clear: each teacher should teach the entire course. Some will object, for it is a hard but uncomfortable truth that most teachers are themselves not generally educated. But the General Education course is no place for a parade of specialists. This reveals to the students that the teachers are themselves too specialized to teach such a course. A succession of specialists tends to fragment the course, destroy its continuity, and nullify its cumulative effect.

Ruth Eckert summarizes the problem of method well:

> There seems to be no one best method for teaching courses in general education, nor even any method unique to this field. Rather, the effective teacher selects pertinent methods and materials, combining them into a pattern peculiarly suited to his own talents and objectives. The difference from teaching in conventional courses seems to be primarily one of emphasis, with the teacher in general education giving special stress to the following points:
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> 1. Underwriting a wide range of objectives, in which the cultivation of interests, aesthetic appreciations, and ethical and moral values receives explicit attention.
> 2. Selecting a few central ideas around which his teaching will be developed, even though this means neglecting many phases of the subject valued by the specialist.
> 3. Keeping a constant focus on the relevance of these learnings now and later, since most students will have to be convinced of their worth.
> 4. Extending students' experiences through the use of audio-visual aids, projects, field experiences, etc., enabling them to gain needed background for understanding the concepts or principles involved.
> 5. Employing a variety of teaching methods in order to maintain a high level of interest and to aid students who learn in different ways.
> 6. Putting students in problematic situations designed to develop their skill in analyzing and dealing with real clashes of ideas.
> 7. Opening new vistas of interest and opportunity, encouraging students to continue their study of these problems, either independently or through formal courses.
> 8. Giving systematic attention to the problem of integration by helping students to see how various aspects of the subject are related and how these bear on their other studies and nonclass experiences.
> 9. Making imaginative efforts throughout the course to evaluate outcomes, aiding both students and teacher to become more skilled in self-appraisal and to develop an experimental outlook on their problems.[7]

The biology teacher has at his disposal a variety of tools to increase the effectiveness of his teaching. Most important is the basic tool of the living (and preserved) material itself, provided, of course, that it is adequate in quality and quantity and suitable in purpose.

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[7] In *Current Issues in Higher Education 1952*, Francis H. Horn (ed.), National Education Association, Washington, 1952, pp. 128-129.

Then too there is now available excellent apparatus and equipment —everything from simple dissecting sets to top-quality microprojectors which enable an entire class to see clearly microscopic materials which might not otherwise be adequately observed. Finally, most helpful audio-visual materials have been placed in the hands of the biology teacher: lantern slides, models, charts, life-cycle demonstrations, plastic-embedded organisms, maps, and excellent offerings of motion picture films, both silent and with sound. By animated drawings and stop-motion photography complicated biological principles and processes can be presented in a manner that would defy adequate presentation by words alone. It behooves the forward-looking biology teacher to become familiar with and to gain skill in using these instructional devices.

The battle over the relative merits of demonstrations versus laboratory work in General Education courses in biology has waxed long and strong. It is not our purpose to take sides. Actually much of the controversy can, in our opinion, be reduced by a definition of terms. The term "laboratory" has no standard meaning; neither has the companion term "demonstration." Surely no one argues that the traditional "cookbook" type of laboratory has a vital place in a program of General Education in biology. If, on the other hand, we are thinking about laboratory work as W. C. Van Deventer[8] defines it—laboratory *experiences* such as films, film strips, student demonstrations, field trips, individual dissections, microscopic work, and the like in contrast with laboratory *experiments* of the traditional type—then laboratory work is significant.

Neither method is complete in itself. Many kinds of experiences have their place in a course in biology for General Education. If a difficult concept needs clarification, if expensive and complicated equipment is necessary, or if the undertaking is time consuming, the demonstration may have advantages. For instance, by means of stop-motion photography and motion pictures the reproductive process and entire life cycle of a plant or animal can be observed in a matter of minutes. No amount of reading could duplicate the effectiveness of this presentation.

But there are circumstances where firsthand individual laboratory experiences have a place. There is realism in the concept of blood groups when the student types his own blood in the laboratory. He better understands the fundamental concept of photosynthesis when he tests a green leaf for carbohydrates. A student may read chapters about *Amoeba* and *Paramecium* and study countless models, charts, lantern slides, and films concerning these *Protozoa*, but the terms *"Amoeba"* and *"Paramecium"* have a different and personal meaning for him after he himself has taken out of a culture a drop of water containing these organisms, placed it on a glass slide, and viewed it through his own microscope with his own eyes. Maybe he could have "answered the questions" without this laboratory work but once he has actually seen these microorganisms for himself they become a personalized part of his experience. This is his own discovery, even though thousands have made it before him. If personal resourcefulness, careful observation, or ability to draw one's own conclusions from the material itself is the desired outcome, evidence suggests individual laboratory work is a most effective agency.

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[8] "Trends and Problems in General Education Science Courses," *Science Educ.*, vol. 33, no. 3 (April 1949), pp. 186-187.

Weston points out that ". . . the primary function of laboratory work as a teaching procedure is to enable the student to learn from the material itself directly, and your function as a teacher is to foster, expedite, facilitate, stimulate, and otherwise aid this important process to the utmost of your capacity."[9] Later he adds, "One of the strongest advantages of laboratory work is that it enables the student to understand the scientific method and make it part of his intellectual equipment, to comprehend the method and the fundamental significance of experimentation."[10]

So while we see a place for demonstrations in General Education courses in biology, we insist that there ought to be enough individual laboratory work to impress upon the student "that this direct study of material was the original source from which came the content of books, the subject matter of lectures, the substance of group discussions and examinations . . . this was the source from which came the facts that led to interpretations, concepts, and theories that yielded the fundamental laws and basic truths by which humanity has advanced."[11]

Field work properly conceived, is, of course, a form of laboratory experience. It provides the outstanding advantage of studying the problem in its natural surroundings. Opportunities for field work will of necessity vary from place to place. Here we may study ecological problems in a swamp, sinkhole, or underground cave inhabited by bats. There we may observe fossils in natural rock strata or learn something of commercial mushroom production in an abandoned mine. In a city, field study may involve trips to a museum, a zoo, a botanical garden, a cancer or tuberculosis hospital, or a visit to the public health office. The alert biology teacher will find many places offering profitable opportunities for field study. Frequently he will find these places right on his own campus, so near to the classroom that the desired observations can be made in a single regular class period. Imagination and confidence in the value of field experiences are the essential requirements.

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[9] Wm. H. Weston in *A Handbook for College Teachers*, Bernice B. Cronkhite (ed)., Harvard University Press, Cambridge, 1950, p. 110.

[10] *Ibid.*, p. 111.

[11] *Ibid.*, p. 110.

The successful teacher will also find ways and means of individualizing the work of his students. This may take any one or any combination of several forms: special reading assignments, projects, student demonstrations, conferences, or special laboratory work. Always the activity should be arranged in terms of the interests and abilities of the students as individuals. Individualizing instruction takes some doing, but it can be done. Certainly in General Education, if anywhere, it should be done.

Finally, the serious teacher will be concerned with the outcomes of his instruction. He will know that educational evaluation is always difficult, but that evaluation of the outcomes of General Education is unusually difficult. He will know that there is much more to evaluation than the much-debated question of the relative merits of objective versus essay examinations. He will know that evaluation must be in terms of the objectives set for the course, and he will know that paper-and-pencil tests over factual information are not enough. He will seek additional means of evaluation. He will look to other institutions, testing agencies, and the Cooperative Study of Evaluation in General Education of the American Council on Education for helpful suggestions. He will assist students in developing skill in self-appraisal, and he will encourage them to develop an experimental outlook on their own problems of evaluation.

Such, we believe, are the material requirements for the effective teacher of biology in general education. But where do we get him?

THE TEACHER TO DO THE JOB

The job of the teacher of biology in a program of general studies calls for a person having a sound General Education himself, together with broad training in biological and related science, a person committed to the philosophy of General Education, and a person skilled in the art of teaching. Such people are not easy to find.

Joseph Seidlin recently set forth a thought-provoking statement on college teaching:

> Many of our "teachers" are not really teachers. They are mathematicians, physicists, historians, linguists, etc.—not teachers. Many of them are men (and women) of great stature; major contributors to science, technology, and the arts; but they are not teachers. On some scales of worth to humanity they outweigh the teachers; but they are not teachers. They might even be indispensable to institutions of higher learning; but they are not teachers. To them, students are a means; to teachers, students are the end products—all else is a means. Hence there is but one interpretation of high standards in teaching: standards are highest where the maximum number of students —slow learners and fast alike—develop to their maximal capacity.[12]

Seidlin was obviously talking about biologists as well as "mathematicians, physicists, historians, linguists, etc." And since we are discussing teaching in General Education his final observation becomes all the more pertinent: "standards of teaching are highest where the maximum number of students . . . develop to their maximal capacity."

It ought to be clear that the teacher is the heart of General Education. Doak S. Campbell put it well:

> Without doubt, the key to any program of instruction is the person who does the teaching. We may have a philosophy ever so clearly stated; a course of study ever so completely planned and executed; an administration ever so sympathetic and efficient; physical equipment in every way adequate, and still fall short of having a satisfactory program of general education unless there is a well-qualified professional individual who is "apt to teach."
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> In the field of general education the problem of good teaching is especially difficult. It requires an understanding of one's field of academic

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[12] "High Standards: Sacred and Profane," *Math. Magazine,* March-April 1950, pp. 191-192.

> specialization in relation to other areas of knowledge. It requires competency to interpret knowledge as a function of daily living. It requires insights into the broader purposes of education that recognize in proper proportion both breadth and depth of scholarship.[13]

One of the work groups at the *Seventh Annual National Conference on Higher Education* had, through its recorder Ruth Eckert, this to say about the teacher and teaching methods in General Education:

> The teacher stands in a crucial role, second only to that of the learner, in forwarding such purposes of general education. For even the most skillfully devised courses or learning aids cannot compensate for serious deficiencies in the instructor. He should himself embody many of the ideals of general education; he should be a broadly trained, socially receptive person who participates responsibly in some areas outside his specialty; deeply interested in students, he should be able, through wise guidance and stimulation, to raise them to new levels of maturity. His particular style of teaching may be of much less consequence than the fact that he understands both general education and the nature of learning and is reasonably skilled in arousing students to lively participation.[14]

So much for general statements concerning the importance of teaching in general and teaching in General Education in particular. Let us consider the strengths and weaknesses of college teachers in biology [adapted from Fred J. Kelly[15]]. On the positive side we can say that as a group they:

1. Have high native intelligence.
2. Are well prepared in biology.
3. Are competent as research scholars.
4. Are generally sincerely devoted to their scholarly work.

There are also entries on the negative side. Too frequently weaknesses include:

1. *Personal inadequacies which make them unsuitable for college teaching.* They are "colorless," "queer ducks," "odd wads." They

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[13] In *General Education: A University Program in Action*, W. Hugh Stickler, J. Paul Stoakes, and Louis Shores (eds.), William C. Brown Company, Dubuque, Iowa, 1950, p. 199.

[14] *loc. cit.*, p. 128.

[15] *Toward Better College Teaching*, Government Printing Office, Washington, 1950, pp. 5-6.

know biology but because of personality difficulties are unable to teach it. They do not like college students, or their attitude toward teaching is indifferent.

2. *Narrow, highly specialized training.* Because of overspecialization zoologists often feel unable to teach general biology or entomology, much less botany or bacteriology. Too often specialists lack the ability to relate biology to other subjects. Too many biologists are skilled technicians, not educated people. They succeed as biologists but fail as teachers. Ortega y Gasset[16] included scientists, because of their lack of culture, among his "new barbarians."

3. *Primary interest in research rather than teaching.* Subject matter development is emphasized at the expense of student development. Research gets the attention; students suffer. College teaching is the only profession where practitioners are ostensibly paid for doing one thing (teaching) but rewarded in salary and rank for doing another (research).

4. *Little or no training in the techniques of teaching.* We do not propose to recommend courses in education as a requirement in the graduate programs of all potential college teachers, although there is something to be said for such a proposal. We know that biologists would look askance at any such recommendation. There are, moreover, means other than courses through which the would-be instructor can learn what he needs to know about teaching. But we do feel obligated to call attention to the Report of the President's Commission on Higher Education.[17] It reminds us that "college teaching is the only major profession for which there does not exist a well-defined program of preparation directed toward developing the skills which it is essential for the practitioner to possess." Whether he likes it or not, the Ph.D. candidate in science is trained in research. The Ph.D. programs in biology, even for those who expect to do college teaching, include little or nothing concerning the learning process, the place of motivation, or the importance of self-direction on the part of the student. The program of the graduate student who plans to teach moves in one direction while he

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[16] *Mission of the University*, Princeton University Press, Princeton, 1944, pp. 57-58.

[17] *Higher Education for American Democracy*, vol. 4, Government Printing Office, Washington, 1947, p. 16.

moves in another. The result is that too many biologists confuse telling with teaching.

We have indicated that no course in biology is better than the teacher who teaches it. By way of summary we would list six essential characteristics of the successful teacher of biology in a program of General Education:

1. *He understands and is committed to the philosophy of General Education.* This is, of course, axiomatic but it is nonetheless a matter of first importance. This is not a profession for halfhearted people. Any doubt on the part of the teacher concerning the importance of General Education is certain to be reflected by his students to their detriment.

2. *He understands and likes college students.* He enjoys being with and working with young people. In order to teach them effectively he knows them well, as individuals. He understands post-adolescent motivation and the psychology of learning. He realizes that he is dealing with immature minds. He knows that as a teacher of undergraduates he is not working on the frontiers of knowledge. Rather he is working with young people who do not know and who need to know more than they now do. Finally he realizes, as Emerson pointed out, that "thought can never ripen into truth" without action. "Only so much do I know as I have lived."

3. *He knows well the field of biology and its relation to other fields of knowledge.* The successful teacher of General Education, whatever his field, is himself a genuinely and generally educated person. This is a primary requirement. But above that the biology teacher must know biology. Inferior scholarship in the field of his specialty and related fields will not suffice. Top-notch scholarship is a *sine qua non* for teaching General Education.

We do, however, insist upon a sensible interpretation of the term scholarship. It is not that scholarship attained only in terms of research. The terms are not mutually exclusive; neither are they synonymous. An individual may be both a scholar and a researcher, but this is not necessarily so. Many fine scholars are not researchers; likewise many researchers are not scholars.

Cowley defines research as "the effort to discover new facts or to recover lost or forgotten facts" and scholarship as "the organization, critcism, and interpretation of facts and thoughts about facts."[18] Research has a place in university work. We would not minimize its importance. We do not feel, however, that continued research in a restricted area is a necessary concomitant activity of the college teacher of General Education in biology. On the other hand, scholarship, which is no less intellectual in its demands than is research, is an important requirement. In effective teaching in the college classroom Cowley reminds us that ". . . three processes and not two must be reckoned with: first, the discovery of knowledge—or research; second, the organization, criticism, and interpretation of knowledge—or scholarship; third, the communication of knowledge —or teaching."[19] Then he goes on to summarize as follows:

> To perceive those three processes clearly also leads to the awareness that research per se has no direct relationship to teaching and that scholarship must stand between them and join their hands. Before research data become teachable they must go through the intermediate stage of scholarship, the stage of arrangement, criticism, and explanation. This means that everyone who is to devote his major energies to college teaching should be trained in the skills of scholarship and that the primary emphasis in his graduate training should be, therefore, upon the organization, criticism, and interpretation of the facts turned up by research people. This will involve enough association with the research enterprise to understand both its insistent importance and its methodology, but it need not involve concentrated and continuous participation in research investigations. Instead, attention must be given to scholarship per se and also to the acquisition of skill in communicating the results of research and scholarship in able teaching. People can learn to teach, but such learning must rest upon the foundation of sound and continuous scholarship.[20]

No longer can the demands of research be allowed to condone ineffectiveness in college teaching. Scholarship rather than research is the need today in General Education.

4. *He knows why he is teaching what he is teaching*. This is to say he is clear as to his philosophy and objectives of general education and of his particular course in biology in the program. The objectives should indicate relevance to the needs and interests of

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[18] W. H. Cowley in *Toward Better College Teaching*, Fred J. Kelly (ed.) Government Printing Office, Washington, 1950, p. 18.

[19] *Ibid.*, p. 22.

[20] *Ibid.*, p. 22.

college young people. They should be shared early and continually with the students.

5. *He employs those methods he uses most effectively.* Again we avoid the temptation to discuss the relative effectiveness of various teaching methods. As Eckert points out, there probably is "no one best method of teaching courses in general education, nor even any method unique to this field."[21] In the long run perhaps a variety of methods will give the best results, provided, of course the teacher is able to handle each method well.

6. *He is enthusiastic about his work.* We tend to teach as we were taught. This is not good enough, for, as Cowley points out, too many of our teachers "resembled lead." Professors have been defined as people who talk in other people's sleep. Too many professors are still that!

Enthusiastic teachers, on the other hand, have a contagion about them which spills over from teacher to student. These teachers elicit activity. In General Education we need more of the enthusiasm which characterized Yale's great teacher of literature, William Lyon Phelps, who said, ". . . teaching is to me the most thrilling of professions," and the old Danish schoolmaster, Christian Kold, who said, "If you will come into my school I will wind you up so that you will never run down." Two decades ago Glenn Frank wrote, "There cannot be routine teaching. There can only be routine teachers."

The enthusiastic teacher sees beyond his textbooks. He soon comes to realize that he himself is his own best teaching device. Ordway Tead points out that, "There is no escape from concern for the total personality which the teacher brings to his task. He is always and literally teaching himself."[22] The old cliché, slightly revised, still stands: "What we are and do speaks so strongly our students frequently cannot hear what we say."

Whether the quotation is original with him or not, T. V. Smith credits a New Orleans mechanic with this observation: "He who works with his hands is a laborer; he who works with his hands and his mind is a craftsman; he who works with his hands, his mind, and his heart is an artist."[23] Combine this kind of artistry with enthusiasm and a new day in General Education will be at hand.

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[21] *loc. cit.*, p. 128.

[22] *College Teaching and College Learning,* Yale University Press, New Haven, 1949, p. 6.

A final word needs to be added concerning the responsibility of the administration for effective teaching in General Education. It too must play a role. Judson Butler indicates that "in most [colleges and] universities, general education is as yet a tender growth. If it is not to be engulfed in a jungle of specialized courses it must be protected against encroachment, and guarded against diversification of aims."[24] To supply this protection is the job of the administration. One measure for doing it is to guarantee equal staff rewards to teachers of General Education courses. If the General Education program is to succeed it is of the utmost importance that teaching effectiveness rank alongside research and scholarly writing in the determination of faculty promotions and salaries. As Ruth Eckert puts it, "They [presidents and deans] must see that superior teaching does help the individual teacher to advance in the academic hierarchy and in the esteem of his fellows."[25]

In an editorial in his university newspaper, a Florida State University student recently wrote:

> The goals of general education are . . . likely to break down at the level of the instructors. . . . Many teachers make no attempt to disguise their contempt for the elementary level of their major fields. They show and quickly transmit their boredom.
>
> Worse yet, many instructors, themselves products of a narrow education, have never stopped to think how their fields relate to life in the whole; they could hardly be expected to kindle a vital spark in the minds of their students.
>
> Thus while general education may be just what the doctor ordered, it cannot work without a student-directed curriculum and teachers acquainted with and interested in the ideals of the program.

We doubt that the problem can be better stated.

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[23] T. V. Smith in *Current Issues in Higher Education 1952*, Francis H. Horn (ed.), p. 60.

[24] Judson Butler in *Organization and Administration of General Education*, W. Hugh Stickler (ed.), William C. Brown Company, Dubuque, Iowa, 1951, p. 369.

[25] "Some Neglected Aspects in the Preparation of College Teachers," *J. Gen. Educ.*, vol. 3, no. 2 (January 1949), p. 144.

ERIC M. ROGERS

CHAPTER X. *THE GOOD NAME OF SCIENCE*

NEEDS AND HOPES

MUCH of the welfare of civilization, and perhaps even its fate, depends on science. Do our science courses educate students to understand this dependence? Scientists have a characteristic way of thinking and planning and working, which we call the scientific attitude, or scientific method, or science itself, that offers intellectual resources and guidance to all students. Do our science courses send their students out delighted with that understanding of science, and ready to turn it in new directions? Can governors and administrators who have taken our science courses confer intelligently with scientists on the vital problems of our age?

Young people are thrilled with the idea of scientific experiments and knowledge. Yet many educated adults boast that they "never did understand science"; or they think of science as a pile of facts to be learned by rote and scientists as mysterious wizards who dispense their occult lore rather unwillingly. Somewhere in school or early college we deaden enthusiasm. A few students emerge still determined to be scientists, but even they usually have a strange picture of science as a sort of stamp collection of facts, or else a game of getting the right answer. And for the majority, well-meant teaching has built a wall around science, a stupid antagonistic wall of ignorance and prejudice.

For the nonscientist, orthodox science courses are a tragic, dangerous failure. Where we offer thorough training we produce uncomprehending headaches. Where we give a comprehensive survey, we produce a muddled haze of facts and a misconception of scientific work. With such gloomy thoughts, some ten years ago, I contemplated the results of years of physics[1] teaching and drew three conclusions:

1. Nonscientists gain little of lasting value from good orthodox science courses, probably because the courses run too fast and attempt too much.

2. Superficial surveys, intended for nonscientists, also fail, probably from excessive content.

3. We try to teach too much material to all our physics students.

Yet my gloom was cheered by two optimistic beliefs:[2]

1. Learning science, and using it and thinking about it, *can* be done in a way that combines useful understanding with lasting pleasure.

2. The time was ripe for reviewing aims and developing new courses.

DISCUSSING PLANS

Close on these feelings of grief and hope came the Harvard Report, and ensuing plans for new courses. The new Princeton program called for a General Education science course in each separate science: physics, chemistry, biology, etc. Discussing plans for new courses, I soon found that while it was easy to secure agreement on general needs and aims, there was great disagreement on detailed aims of science courses for nonscientists, and on methods of achieving those aims. But then the picture began to take shape in an encouraging way; I found we could all start in agreement on *general* aims, and we could all end in agreement on an important general prescription: the new courses should *treat less content and pay more attention to good understanding and discussion of the nature of science.* We each proposed to treat fewer topics than an orthodox course, and treat them thoroughly—to favor understanding and

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[1] Because I am a physicist, I shall describe my fears, hopes, and plans in terms of physics, convinced that much the same applies to other sciences.

[2] See Eric M. Rogers, "Samples vs. Surveys," *Am. J. Phys.*, vol. 14, pp. 384-387 (November 1946); also "Laboratory Experiments," *Am. J. Phys.*, vol. 15, pp. 80-81 (January 1947).

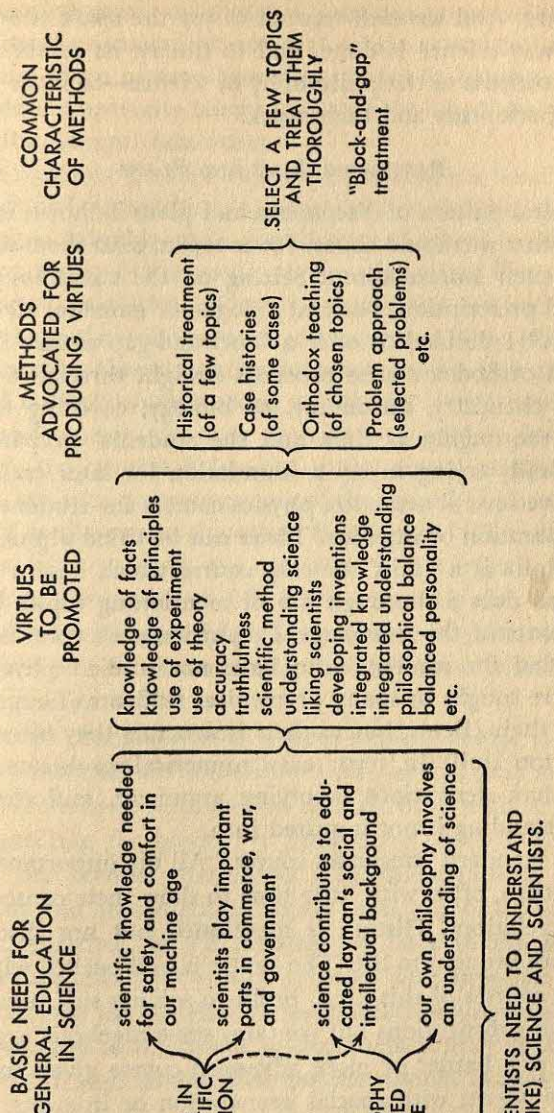
BASIC NEED FOR GENERAL EDUCATION IN SCIENCE
WE LIVE IN A SCIENTIFIC CIVILIZATION
AND
OUR PHILOSOPHY IS INFLUENCED BY SCIENCE
scientific knowledge needed for safety and comfort in our machine age
scientists play important parts in commerce, war, and government
science contributes to educated layman's social and intellectual background
our own philosophy involves an understanding of science
NONSCIENTISTS NEED TO UNDERSTAND (AND LIKE) SCIENCE AND SCIENTISTS.
VIRTUES TO BE PROMOTED
knowledge of facts
knowledge of principles
use of experiment
use of theory
accuracy
truthfulness
scientific method
understanding science
liking scientists
developing inventions
integrated knowledge
integrated understanding
philosophical balance
balanced personality
etc.
METHODS ADVOCATED FOR PRODUCING VIRTUES
Historical treatment (of a few topics)
Case histories (of some cases)
Orthodox teaching (of chosen topics)
Problem approach (selected problems)
etc.
COMMON CHARACTERISTIC OF METHODS
SELECT A FEW TOPICS AND TREAT THEM THOROUGHLY
"Block-and-gap" treatment

FIG. X-1

liking science. And we each wanted to use the spare time to argue about the way science is done, and to discuss its methods, and to introduce students to the philosophy of science—to favor an understanding of scientists and their work.

REVIEWING AIMS AND PLANS

The general pattern of discussions and plans is shown in Fig. X-1. We agreed that we should choose fewer topics, treat them thoroughly, and show their interrelations. Seizing on the common pattern of this general prescription, I coined a slogan or name for it, block-and-gap courses.[3] I decided to offer a block-and-gap course in physical science. An orthodox course proceeds straight through a field such as physics, chemistry, astronomy, or biology, covering the subject matter as thoroughly as time and the students' preparation will permit, usually trying to lay a foundation for later courses. Some colleges have several orthodox physics courses for students with different preparation or interests. These can be titled alpha, beta, and gamma. Alpha is a "thin" or easy course which begins at the beginning and does a thorough job of mentioning topics but avoids the hard parts of the treatment. In physics, such courses are often recommended for students who have not studied physics before, and they are sought by many premedical students. They seem hard enough to their clients, but to their instructors they often seem too easy and too dull. In tests, easy numerical problems are more common than derivations involving argument, and the student's real understanding is not inquired into.

Beta is a standard "freshman course." All the important topics are treated in turn, often with little time to show their consequences or their interrelations. History is mentioned but not discussed and certainly not brought to life. The course is well packed with content. In physics courses of this kind, problem solving still involves many arithmetical substitutions but contains some algebraic argument.

Gamma is a harder or more advanced course given in some colleges, for students with special preparation or interests. Note that since such courses trade on students' previous preparation, they can omit considerable patches of material, while expanding others and even treating them as case histories. Curiously enough, a gamma course is often a specially hard version of the block-and-gap course that I use for General Education.

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[3] I have since regretted the term, because some critics take it to be a patent name for a particular type of teaching. Far from that, I only wanted to suggest a well-planned diet, in contrast to overstuffing or tidbit banquets. I had no intention of specifying a particular regimen or restaurant.

One type of course used for General Education has been a "survey" course which at least mentions a large number of topics. Some claim that this gives valuable wide acquaintance; others condemn it as giving a smattering of facts with no time for either thorough treatment or discussion of ideas. We may describe this as a series of small patches all over the wide table of the sciences. If we like, we may draw a connecting thread linking the many patches in a pattern, but little blood is likely to flow along so thin an artery. I call this the "smörgåsbord" course. As thus described—a wild rush through a host of little topics—this is not the course any of us wish to claim as our own, not even the proponents of the several kinds of "survey." We think it is the course the other fellow gives! The smörgåsbord course does little to show the structure and methods of science. Another of its dangers is that it tends to glorify the "wonders of science," paint the romance in glowing colors, and make the scientist seem a wizard who works in magic. Science courses should debunk such false notions.

The essential characteristic of a block-and-gap course is that large quantities of material are omitted outright, so that only some of the topics of an orthodox course such as beta are dealt with, say, half the topics. Connecting the blocks are lines along which flow the "lifeblood" of the course: discussions and investigations, historical studies, ideas and information carried from one block to another, and thence, enriched, to still another or back to the first one—showing the organic structure of science. The gaps are essential; they give room for the lifeblood to show interrelationships, and they reduce the content of the course so that there is time for discussion, time for ideas to sink in, and time for the student to look back and reconsider.

Whatever our differences of aim and course structure, this name "block-and-gap" seems useful as a description of the kind of course we are trying to provide for General Education. Critics, seeing the name, may complain that a set of unrelated topics lightly treated would make a poor course, a sort of emaciated survey. This is not what I intend the term to mean. The blocks are meant to be related, by pointing the moral from one to the other by referring back to earlier ones or prophesying forward to future ones, and their topics are meant to be treated seriously. In fact, the blocks should be both dense and extensive. The discussions should be thorough, explaining essential points thoroughly, and they should extend to neighboring material, pursuing some of it to an advanced stage.

For example: an orthodox beta course in physics will certainly treat the kinetic theory of gases, probably stopping at a prediction of Boyle's law and a brief mention of diffusion. In a block-and-gap course, kinetic theory may be selected as a block or it may be omitted; but when I do select it, I treat it slowly and thoroughly so that students have time to discuss its assumptions and to understand its mathematics instead of learning parrot-fashion for examinations, and to see its use as a theory. Like other blocks, if it is done at all it is done well. The student needs to see more of the results the theory can yield. In my kinetic-theory "block," I continue through comments on molecular speeds, velocity of sound to a discussion on gas viscosity, with an experimental test of the theory's surprising prediction that gas friction should be independent of the pressure. Here is theory being used and tested, then used to predict the breakdown of its own prediction.

PLANNING MY COURSE

In planning my course I reviewed the many aims suggested. They fell into three groups:

GROUP 1. *Content.* We must impart scientific facts and principles.

GROUP 2. *"Higher virtues"* such as training in accuracy, critical thinking, scientific honesty, balanced personality, and of course, scientific method. (I am sure there is no unique scientific method.)

GROUP 3. *Understanding and appreciation of science and scientists,* of lasting value in later life. This involves a happy acquaintance with science, some knowledge of scientific material, some understanding of the methods of science.

I decided that Group 3 should be my paramount aim, that Group 2 is practically unattainable, and that Group 1 has been overdone, with dire effects on the reputation of science. Of course content is useful, in kitchen, factory, life in general; and I planned to teach a considerable body of facts and principles, but not so many as to make the course crowded, rushed, unfinished. Facts are soon forgotten. Ten years after college what is left? Certainly not the facts; even the principles are ill remembered (Be realistic; ask your friends). So I proposed to reduce the content to about half that of an orthodox physics course.[4] And I proposed to disregard the "higher virtues," or at least shelve them as not directly attainable. Why? Because my psychologist friends reminded me that students do not learn that way.

"Higher virtues," as listed above, would indeed be wonderful. But science teaching cannot confer these benefits on pupils unless the training given in science classes can somehow be "transferred" to other fields of study and to life in general. Psychologists tell us that this is highly improbable unless the situations are similar and the motivations are strong.

MY BLOCK-AND-GAP COURSE

Here, then, is the plan which I have carried out for several years, with some reassurance of success from student discussions, examinations, and questionnaires. I give a block-and-gap course in physics in which I try to make students understand—and like—some parts of physics, and then understand what science is like and what scientific work is like, or at least what scientists are like. These, I think, are the most real and probably the most important things I expect from my course.

Some of my teaching is given by lectures, with demonstration experiments to be argued about; some by small class sections where good scientists discuss good science with students as fellow scientists; and some in laboratory where experiments are informal, and are given plenty of time, with few instructions. This is a block-and-gap course taught by orthodox class methods. I do not believe there is magic virtue in any particular method of teaching. I would gladly change to a block-and-gap course of case histories, if I had a staff with genuine enthusiasm for the history of science.[5] As it happens, I have a staff with genuine enthusiasm for contemporary physics.

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[4] I find that others giving such courses agree with this reduction: about 50 per cent. A cut of 10 per cent would be mere paring. One of 80 per cent would reduce the course to pleasant storytelling.

We first help the student to understand the facts well, then stimulate him to think about their meaning and relationships, and then encourage him to generalize the understanding he is gaining.

As a basic policy, I teach pieces of good physics, as samples of good science. If I can give a keen sense of what science is like in my course, *then* some students may be able to link science with history or religion, practice physical methods in sociology, or apply it to their personal lives. It is my duty to point out such avenues to my students and urge them to explore; but my main work must be good science, or I defeat my main object and with it all others. I will not prostitute my physics course to the exposition of scientific sociology or to exercises in English reading.[6]

I try to achieve my special aims (in contrast with just imparting knowledge):

(1) By raising philosophical questions in lecture—"There's Hooke's law. What do you mean by 'law'? Who *obeys* what?"

(2) By encouraging discussion and argument in class—"What makes an experiment a *success?* . . . (silence) . . . "Well, what makes a party a success?" . . . (hubbub). "Now what makes an experiment a success? Let's make a list of different peoples' views."

(3) By running laboratories slowly with discussion meetings *after* the experiments.

(4) By assigning weekly problems which raise discussions. I regard the problems as important. Since they are not examinations we can ask vague argumentative questions that lead to useful talk.

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[5] I have some doubts about historical approaches for the average nonscientist. When I read case histories myself I am thrilled; I enjoy reading Boyle's difficulties and arguments and experiments, or linking Newton's work with the social, intellectual, and philosophical background of his time. But then I know some of the physics and chemistry of these matters already. Does it follow that this is the best fare for freshmen? I find *some* historical treatment is useful, almost essential, but as a general policy I leave it to the rare genius who has his heart in history.

[6] But semantic questions crop up often in my course, quite rightly. "What do you mean when you say the theory is 'true'?" "Why is it uncomfortable to say an electron is a wave and a particle?" And definitions give much food for thought.

CHOOSING MY SCHEME OF BLOCKS

My choice of blocks is not so important as the way I treat them. Yet my topics must hang together, one preparing for another, and one reflecting back to another; the whole framework must "make sense," like science itself. So when I had chosen a few blocks for special reasons, the rest followed as necessary preparation. For student interest, I decided to make atomic physics prominent, including the cyclotron (since we have one) and including atomic energy (because the Chemistry Department advertised it in their course). This large block, with all the groundwork needed to make it seem sensible, not magical, fills much of the year. It hangs together, and offers good opportunities for matters I want to discuss. And I trust laboratory to provide for some worthy minor aims: teaching householders' electricity (volts, amperes, watts, etc.); contrasting extrapolation with interpolation, showing how empirical experimenting leads to laws; showing how research is planned, and how the experimenter keeps an open eye for the unexpected; showing honesty in treating observations; making students experience the delights and sorrows of experimenting.

Yet *the relation of theory and experiment,* a paramount matter for discussion, would still get a poor deal. Atomic theory is too profuse; much of it must be taught by the "handout" method, which ruins most elementary chemistry teaching. Kinetic theory of gases is too difficult for a beginning. So I spend some six weeks early in the course on an old friend, the history of planetary astronomy. Here is history in a welcome form, and here is a magnificent easy study of the growth of science, from empirical knowledge to machinery and laws, and then, with a jump, to a grand deductive theory. I start with unreliable information about primitive man, run through Greek astronomy, build the Ptolemaic system, study the work of Copernicus, Tycho Brahé, Galileo, Kepler, and Newton. I give some account of these men's lives to make the scientific growth easier to learn; but my main preoccupation is with the changes in the nature of science. Cyclotron and planets; those two topics, together with the groundwork, write my syllabus! Start with the cyclotron and work backward, filling in the needs (Fig X-3).

Figure X-3.

Cyclotron
Electric and magnetic fields
Electric circuits, charges, magnets
Energy and energy conservation
Heat as molecular motion
Radioactivity
Ions and atoms
Simple chemistry
Molecules
Kinetic theory of gases
Discussion of good theory
Newton's gravitational theory: many applications; v^2/R derived[a] and used
History of planetary astronomy
Momentum and momentum conservation
Force, mass, motion: Newton's laws of motion

[a] I would not use v^2/R without deriving it. I would not derive it just once and leave half my class with a headache. I hesitate to spend time on a series of attacks if it is to be used just once. But it has many uses: essential in Newton's astronomy, in cyclotron ("no algebra, no cyclotron" is my motto; I am not running a kindergarten), and essential for a lab experiment in which students measure e/m for electrons, to see how such atomic knowledge is gained. So I derive it in lecture, and ask for opinions ("tough"); then wait a week and derive it again in lecture, then in class, then in an assigned problem. An offer to derive it yet once more brings groans from many and agreement from most that it is now reasonably easy. I point the moral that mathematics is useful and learnable. I have broken the back of the algebra bogey for some of my students, and I have given an essential formula a solid foundation.

There is my course outline, written backward—a healthy way to write a block-and-gap syllabus. It needs a beginning: I use an empirical study of falling bodies and accelerated motion to set the ball rolling.

Some small topics are covered by reading alone; and at the end of the year a long "reading paper"[7] written on some topic just outside the course gives a sense of pride in expert knowledge.

Laboratory work teaches some topics completely, and deals with others empirically before law and order are produced in lecture. I do not value the laboratory for training in techniques, nor for the startling agreement with the text that a well-rigged cookbook can yield. But for many the firm basis of science in experiment is never clear until they do their own laboratory work. For others it is too optimistically clear, and they need to work in a laboratory too. All need to learn the delights and sorrows of experimenting if they are to understand the work of scientists: I doubt if the average freshman can gain a real feeling for scientific experimenting, ruthless honesty, and clever inference by reading the records of great scientists; he needs to use his own hands. For such benefits there must be plenty of time, few instructions, freedom for each to try things on his own, and quiet sympathetic instruction. By taking time for good experimenting and discussion, we cut our laboratory syllabus to about half that of an orthodox course. Instructors are delighted with the relief of pressure; and students find the laboratory demanding but profitable. The equipment is simple: cheap springs for multifarious investigations, pendulums for a three-week empirical workout. Hearing of the latter, critics complain that we do ungenuine "discovery experiments." Neither our instructors nor our students are so stupid, or dishonest. We all know the pendulum laws were discovered long ago; but students are more than happy to try to wrest such laws from their own experimenting.

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[7] I am indebted to E. C. Kemble of Harvard for this excellent suggestion.

Only a few of our experiments are "empirical investigations" but these are the ones that leaven the course. As an example, here are details of the spring investigation. Each student is given several cheap spiral springs and asked to find out all he can. We give enough weights to ruin the spring but we give practically no instructions, beyond suggesting observations of stretch "as well as other experiments you devise for yourself." The first afternoon is rather dull and uneventful; most students try loads and stretches dutifully. Those well trained in school tend to stop at the Hooke's Law limit and say "My spring has gone wrong." Those who did no physics at school are better scientists and push their investigation to the bitter end, learning more about springs, about experimenting, and even about metaphysics. By the second week a number of projects are under way: creep, torsion, effects of heating and freezing, compression, comparison with other springs, oscillatory motion of a load (surprise). We provide occasional encouragement and do our best to meet every reasonable demand for equipment. We often have a research council meeting of the class after two weeks, to pool methods and results; then we continue one week more. The yield in such laboratories seems to grow exponentially. If only the teaching staff has patience, later weeks of this and other "open" experiments will pay off in interesting results, keen experimenting, and a delight in science.

In arranging lectures, classes, laboratories, reading, and—very important—problems and tests, we keep in mind both our outline of topics and our general aims. To illustrate this sense of watchfulness, I append some imaginary but typical admonitions to various people concerned with the course.

To my class teachers:

> Your students are nonscientists, they are well-educated, intelligent young people, but this is their final science course—unless we leave them so delighted that they want to go further. This is their only chance to meet and talk with a good physicist face to face. So please respect their interest and their questions. If they raise a question, chase after it, answer it, and encourage a discussion. If a chance remark leads to something interesting in your own field of work, let yourself go, dive in with enthusiasm, talk, explain, and discuss. Do not talk down to them, but talk with them as fellow scientists. Never mind if this plays havoc with the syllabus. In this course topics can wait, or be shelved forever. To have the students understand science and know and like scientists matters above all. This meeting in your small class group offers a glimpse of scientists that neither lecture nor laboratory can provide.

New instructors do not believe me. They are sure they must try to follow the syllabus. I give them an outline of what I plan to do in my own class—though I seldom get it done—as an insurance against stage fright, and as a coordinating guide in case there *is* spare time. But an instructor comes back and says, "I never got to the inclined plane; they started arguing about the speed of light." I say, "That's *good*"; and after a few weeks he believes me. Sometimes class and instructor disappear to a research room, and then I know there will be success. But what about the syllabus? Well, first of all, topics can be omitted; it *is* a block-and-*gap* course. If keen class discussion, where students and teachers match their interests in science, can build a vivid sense of science to hold the blocks together, that is far more valuable than a few overlooked blocks. Second, lectures can maintain continuity; if classes miss an important topic, I cover it in lecture. Third, we assign weekly questions designed to promote thought and raise problems in preparation for later topics. The answers go to class instructors to be read and given a rough grade, merely A, C, or E. These weekly assignments influence instructors' interests, and make students raise problems, thus tying classes to some extent to the syllabus.

As general preparation for his work, I suggest to each new instructor that he should read Butterfield's *Origins of Modern Science,* and I ask him two questions: "What should we try to give these nonscientists?" and "What are scientific methods?" I accept their answers to the questions, but knowing that I have not finished answering them, I expect the questions to remain and influence my colleagues' teaching.

To my weekly problem assigners (chiefly myself):

These problems serve some mundane purposes: to compel reading and general diligence, to guide students and staff along the syllabus, to offer practice for examinations. But their main functions are to promote thinking and to enable each student to learn by his own thinking and argument. Therefore hesitate to assign numerical problems that encourage mere formulamongering and parrot learning. They give science a bad name. Look ahead to the later topics; supply plenty of information and ask leading questions.

Examples:

(1) (after first experiments on vertical free fall): Drop a ball in a steadily moving train. What would you observe? What would a man sitting on the hedge and watching through the windows, observe concerning (a) the ball's vertical motion, (b) its horizontal motion? Now suppose that instead of being in the train, you stood still and threw. . . .

(2) (toward the end of the course): Alpha particles from radium can be shown by field deflections to have two electron charges. A stream of them from a speck of radium can be caught in a metal can, and the total charge measured. Or the stream can be fired at a Geiger counter. What important atomic measurement could be derived?

Ask more general problems that will lead to discussion.

Examples:

(3) (about mid-year): In your laboratory work, we sometimes throw out a measurement as "wrong," and do not use it. Is this good science or bad? Discuss with examples.

(4) You have seen demonstrations illustrating Newton's laws of motion with a truck pulled along a level track. Now suppose the experiments are repeated inside a railroad train (a) at rest, (b) moving steadily, (c) accelerating. Would you still find Newton's first and second laws reliable summaries of behavior? [This question gets most students into difficulties

and produces class discussion that can lead toward general relativity. We soon have an imaginary carpenter fix up the interior of the train on a tilt so that the simple laws again hold.]

(5) Scientists sometimes label one experiment good and another bad. What would you say are the characteristics of a good experiment? [This produces many answers according to the stage of the course. Neither students nor staff agree on unique answers that are the "right" ones. We insist that though there are some wrong answers, there are many right ones, all of which we accept.]

To my examiners:

Look at the weekly problems. Listen to the atmosphere in laboratory. Think what you would like your own brother-in-law to retain as an attitude toward science. Ask questions that use solid science but also require thinking. Try to test genuine understanding rather than parrot learning. Start with a few simple calculations to cheer up the formula-mongers who are still with us. [The high schools, *and* the preparatory schools have done their work, and with slower students not even a year will undo it.] Then a few easy qualitative problems to comfort the credit adders [there again, schools]. Then ask the real questions. Some can be short; e.g., Two electric lamps, A with clear bulb, and D with a "Daylight" bulb of bluish glass, have identical filaments and are run on the same voltage. (a) How will their power consumptions compare? (b) Will lamp D give the same amount of light as A, or more, or less? (c) Give a reason for your answer to (b). (d) If the two lamps do not give equal streams of light, what happens to the difference? Explain fully.[8] Some questions are long: e.g., Describe the working and use of a cyclotron. These offer a wide range of difficulty to different students. Some can be vague, as: Compare the parts played by theory and experiment in building a science. What is meant by *good* theory? Discuss examples. We find that answers to these vague ques-

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[8] Such questions are excellent and can be put in short-answer form, printed with a space on the question paper for a few words of answer. This has three advantages : (1) it indicates the size of answer expected, and often shortens the writing by allowing the answer to be marked on a diagram; (2) it is easy to grade correct; (3) if the student receives his corrected test back, he can see his mistake easily. But the answers cannot be graded by a machine or by a secretary, they must be read by a scientist. My students deserve to have their examination answers read (quickly) by a scientist.

Well-meaning attempts to reduce such questions to completely objective form, gradable by machine, take away just that freedom of wording that nonscientists need in this course; they encourage answering by betting against improbable answers; and they leave wrong answers floating around in the student's memory. All in all they can give science a bad name.

> tions can be graded, at least into a small pile marked good, a large one marked satisfactory, and a small pile marked bad. The amazing thing is the high correlation between these results and the results of short sharp questions. The few students who write nonsense about theory are the ones who cannot calculate electric power.
>
> Be careful that the items needed for each problem are things covered thoroughly in the course. We should not trade on chance memory or extra cramming. We look for good use of well-learned material, just as we should in consulting a colleague.

This makes the value of an examination question variable; a strong function of the course. A good question in one course may be a bad one in the next. For example, the problem about the daylight bulb is a good one for a class which has studied energy conservation *and* some electricity *and* color filters. Omit the lecture on color filters, and the question becomes a poor one. That is why I fear national programs of uniform objective tests; they could stultify the teaching of real science for General Education.

To my laboratory instructors:

> You are host to young people who come to do real, though unfamiliar, experimenting. Make each feel that he is a "scientist for a day." Consult seriously over difficulties, as a fellow researcher, not as omniscient teacher. Respect their needs, and their judgment. If they ask for extra apparatus, try to provide it without question. If they ask: "Is this right?", "Will this do?", "Is this accurate enough?", reply with a question: "Will it answer your question?", "Do *you* trust it?", "What accuracy do *you* want?" Let them make mistakes, and learn from them. Give them time to make the experiment go with their own help, not yours, and they may learn the delights of experimenting. Encourage them to face difficulties honestly, so that they learn the limitations of science and the sorrows of experimenting. In general, avoid interrupting (except for matters of safety), and avoid answering questions, except to reply by another question.

Of course such direct sermonizing would no more teach young instructors to change their ways than it would teach anyone to be virtuous. My actual procedure is to start with this admonition, then teach in laboratory myself, remaining silent and asking questions loudly enough for my colleagues to eavesdrop on me. They soon discover my advice was serious: I do want them to be silent without being dumb, to encourage experimenting without giving away the answers. They learn to begin the session with no detailed instructions—"minimum cookbookery, maximum inadequacy" is my motto for laboratory manuals—and then later in the day gather the whole group together for a "research-council discussion" of accuracy, methods, results, improvements, further experimenting.

To laboratory-report graders:

These students are not future engineers being trained; they are non-scientists who need to like science. Give lavish praise to critical thinking, careful experimenting, justifiable inferences, and above all to a sense of enjoying the experiment. Do not worry much about neatness and spelling—if a dozen years of school have failed, it is too late for us to begin. Do not harp on technical discussions that will have no later use. Do not require long descriptions of procedure or lists of apparatus—even a moron could infer those from the student's recorded measurements, and you should pose as a fellow scientist, not a moron.

To colleagues and critics elsewhere:

You ask me about success. I know from talking to students in later years that we have some success—lasting interests, and sense of understanding and good will toward scientists. And I know from talking to many others that orthodox science courses have many failures. "I took physics but never liked it; didn't understand it," is a common comment from educated people; a tragic condemnation of education for the present civilization. Yet we must not expect huge yields: conversion of half our students, a new attitude in three-quarters, a great understanding in nine-tenths. If one student in twenty is thrilled by an experiment, or one in twenty is delighted with a clever use of theory and decides to remember it, or one in twenty suddenly sees the firm foundation of scientific accuracy, I am content. They may act as a leaven to make more gain in a future generation, and for the moment, these small gains, here in one student, there in another, are things that may last, and are worth the trouble.

If you survey our slow progress in laboratory with grief, or worry over our shortened syllabus, come and teach in the course. Those who do, lose their doubts and even enlarge their own interest in the philosophy of science.

To myself and my fellow instructors,
planning the year's work:

Look ahead to later topics. Then if signs of them crop up in earlier discussions we can spend time happily laying down needed foundations.

When tempted to treat some topic which has neither later uses nor special philosophical value, try to avoid it. Constantly remember we are teaching nonscientists. More philosophy (in the sense of simple thinking about our work) may be better than an extra fact. Ask yourself two questions often, "What are we teaching science to these students for?" and "What are scientific methods?" The answers to these two questions are not fixed; they will shift and grow in our minds as we brood on them, and as we teach; and in this process lies the key to the health of our course and the happiness of our students as young scientists despite themselves.

To deans:

This course aims at lasting benefits for nonscientists: ability to use science and deal with scientists, and an understanding of science as part of the intellectual background. To have any hope of achieving such aims, we must restrict our topics, and even our field of topics. So please do not press for tidbits to be added to the syllabus.[9]

Laboratories, though they cost most, seem essential; many of our students must learn by doing. I believe only the abler ones with a taste for history can replace laboratories by reading original records. However, laboratories in this course need fewer instructors. For much of the year, half as many staff per student can move silently round a good laboratory and not answer questions. But instructors for class and lecture must be people who are sure of their knowledge; not trained teachers who pour it out with unwise force and clarity, but sympathetic scientists with the self-confidence to behave as temporary agnostics.

To colleagues who plan to start a course elsewhere:

Think out your own aims and syllabus. Though yours and mine may differ, neither of us need be wrong; each scheme may fit the man giving the course. For General Education, I urge a block-and-gap treatment; but that does not settle the choice of topics or even the system of teaching. Choose between case histories, orthodox lectures, and historical treatment, and choose your own group of topics. The mere processes of thinking out your aims and choosing your scheme will make your course fit you and make you fully aware of it and give it a vitality that is important for a course with such aims. Ask yourself and your colleagues, "Why do we teach science to these students?" and after the usual reply, "What *are* scientific methods?" Then go ahead and teach with a happy heart, exercising three censorships: (1) Do not include a topic unless either it illustrates an important matter of philosophy, or it crops up in several places, showing useful linkage. (2) Do not rush through laboratories. Think what you are after. (3) Think carefully about problem assignments and examination questions.

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[9] "Earth science" seems to be a special temptation to deans as a candidate to be added to physics courses for general education. Earth science by all means as the science to be sampled; but a mixture of physics *and* geology seems to me to skip to and fro over too much ground when we want to exhibit both continuity of scientific thought and depth of scientific knowledge.

To my chairman:

In assigning staff to my course, please give me teachers who would enjoy trying it, if possible a philosopher or two; people who will enjoy encouraging argument and critical thinking, who will go into classrooms as sincere scientists.

In practice it is easy in most departments to select a good staff. Sometimes a young graduate student comes nearer to the flexible attitude than a senior professor; but sometimes the senior professor brings the ideal philosophy and feeling of confident immersion in his field. Not everyone is suitable: a slick problem-solving tutor can wreak utter ruin in this course, though some say he is good with engineers. I sometimes think that among younger teachers an experimental man is a safer bet than a theoretical one—the latter is more likely to look down on elementary teaching. Incidentally, teaching in this course leaves its mark in attitudes and techniques that persist.

To my students (at the beginning):

We shall explore some pieces of science together, *thoroughly,* with the stern discipline of good scientists, but *carefully* so that you understand the material. Then we shall turn and criticize the material and the way it is gathered; we shall test the validity of our views, brood on the very nature of science. Be cunning and critical, argue logically, experiment boldly, and you will learn happily. What you learn happily may be of use long after. You live in a scientific age, and whatever your work, you will meet with scientists and have to deal with them. You may not employ them or be employed by them but in any case you will have to meet them face to face. The *facts* I teach you will not last, but if you learn to understand science and to enjoy the way scientists tackle problems you will gain things of great lasting value for all your life. I cannot make you carry a scientific attitude away into later work in other fields; but you can make yourself do it, *if you enjoy what you learn and want to extend its use*. That is what the psychologists tell us: only if you develop delights in science and want to be scientific will you make permanent gains and spread them to other fields in life. The future rests with your attitude now, so with your own good in mind I wish you a happy serious year with science.

All through the course: I comment with emotion on scientific methods—tricks, techniques, attitudes, systems, all knowledge. "That's really good experimenting, to reverse the current as well." "There's theory at its best; without a theory the idea of a ring magnet is nonsense; with it, a ring magnet is obvious and useful. You have seen clear sense emerge where there was nonsense—an amazing achievement of theory." "Mathematical wizard?" "No, just a sausage machine to rehash the facts." "As good scientists, let's test the prediction."

To my students (at the end):

This, then, is my blessing: you have learned some science, you have seen some science done, you have often been scientists for a day. Never mind the facts, beyond the final examination, but keep the fancies. Keep the liking you have for scientific knowledge; keep your enjoyment of experimenting. Keep an understanding of science itself. If at some future time when you are a business head or a mayor of a town, or what you will, you are faced by some problem and you weed out prejudice and humbug and say, "Let's experiment," or, "Let's review reliable tests," or "Let's consult a qualified expert," the course will have been worth while. And if, in later years, you occasionally read science, popular or technical, and enjoy reading it and discussing it with scientists, if you can enjoy meeting scientists eye to eye, then we have indeed done well, you and I. You shall take your place in a scientific civilization, and shall maintain the good name of science.

HAYM KRUGLAK

CHAPTER XI. *THE LABORATORY AND PURPOSEFUL ACTIVITY*

INTRODUCTION

WHETHER he is a physicist, or a botanist, a geologist, or a physiologist, the scientist engages in many intellectual and practical activities, of which laboratory work is one of the most important. Without the continuous interaction of experimental facts and theoretical ideas, modern science would soon lapse into a sterile discipline. Many science courses in General Education do not offer laboratory; others have only token laboratory activities.

I do not believe it is possible for a student to understand what science is like, what scientists are like, without some firsthand experience with the objects, tools, and methods of science used in the laboratory.

NEEDS AND ADVANTAGES OF LABORATORY ACTIVITIES TO GENERAL EDUCATION STUDENTS

The understanding of scientific methods and the development of scientific attitudes are two of the most frequently discussed objectives for General Education. Reaching these objectives in the classroom is doubtful unless the student has had some personal contacts with the interactions between the real world and man-made constructs about it. To let a student struggle with an experimental problem no matter how elementary, is to make him experience what every scientist goes through in his work.

All sorts of claims have been made in the past for the impact of the laboratory on the student. The discrepancy between instructors' goals and students' achievement has been more pronounced in the laboratory than in other areas of science education. The "cookbook" directions, the tedious verification of already known relationships, the lack of integration with other course activities have been typical of the shortcomings in the elementary science laboratories. It is not surprising therefore, that in recent years teachers have become skeptical of *any* contribution that the laboratory might have for General Education objectives, and have turned to other methods.

The need for a large staff to conduct laboratory work is a serious financial and manpower problem for many schools. In postwar years the veteran enrollment put a premium on classroom space. Some colleges felt that they could not spare any instructional time for supervision of laboratory work. Others, realizing that conventional experiments were not suitable for General Education, decided to forego offering laboratory work until the whole movement should become more sharply defined in terms of specific objectives.

It is apparent that the laboratory issue is far from settled and that little objective evidence is available on the subject. Thus, despite the strong recommendations in favor of laboratory work contained in the *Harvard Report*,[1] the physical science courses at Harvard are taught without individual laboratory.[2] Glockler admits frankly that in the Physical Science course without laboratory at the University of Iowa, "the students get a sufficient idea of the subject to claim that they have learned something *about* chemistry."[3] Yet this process of learning *about* science is the pedagogical shortcoming that General Education is trying to overcome.

The problem was also discussed at some length at the Minnesota Conference on Building a Program of General Education. Its Physical Science Work Group proposed that a study be made of the value of individual laboratory experience in General Education science courses and to determine, as well, the practicability of setting up such facilities in terms of money, space, manpower, and time.[4]

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[1] Harvard Committee, *General Education in a Free Society,* Harvard University Press, Cambridge, 1945.

[2] Paradoxically, the stronghold of rationalism in the Middle West, the University of Chicago, provides laboratory in the natural sciences that would not offend the pragmatists. See Joseph J. Schwab, "The Natural Sciences—The Three-Year Program," in Faculty of the College, *Idea and Practice of General Education,* University of Chicago Press, Chicago, 1950.

[3] See Walter F. Loehwing *et al.*, "Science in General Education at the University of Iowa," in Earl J. McGrath (ed.), *Science in General Education,* William C. Brown Company, Dubuque, Iowa, 1948, p. 169.

In this age of large enrollments the laboratory offers an opportunity for individualized instruction. It is here that the student-teacher relationship can be put on a more personal basis; here the student can get help at the time he needs it most; here the student can display his originality with the problem at hand. Here the student is not a passive learner; he is a *performer*. There is a job to be done and it is up to *him* to *do* it. In this sense every laboratory exercise becomes a performance *test* for every individual in the group. If the problem is to find the horsepower developed in running up a flight of stairs, the student does the running; he operates the stopwatch and reads it; he measures the height of the stairs, and he makes the calculations with the appropriate quantities and units.

Then too, it is in the laboratory that the overt behavior of the student can be best appraised by direct observation. Does he approach the problem systematically, or does he flounder around? Does he work independently, or is he seeking help continuously? Does he have original ideas or is his approach conventional? Does he work quickly, or accurately, or slowly, or sloppily? Does he know what to do with data? Does he fail to see the relation between the objectives of the task and the results? Does he keep a legible, orderly record, or does he scribble meaningless hieroglyphics? An alert instructor can spot quickly the "natural" experimenter, the parasite, the slowpoke, the data-fixer, the plodder, and the accident-prone.

Laboratory work can be used to illustrate certain characteristic stages in the development of science. For example, to show the effect of instrument precision, I have my students perform a fairly conventional exercise on the combining weight of magnesium. The magnesium sample is weighed before and after oxidation on a trip balance as well as on an analytical balance. In the first case the results are most uncertain and often absurd; in the second case the experimental data can be used to draw meaningful conclusions.

The laboratory can also be used to dispel the notion that the

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[4] H. T. Morse (ed.), *General Education in Transition*, University of Minnesota Press, Minneapolis, 1951, p. 176.

"scientific method" is a magic formula for making discoveries. The ability to enumerate the "steps of scientific method" is not sufficient, for example, when a student in the biology laboratory at Michigan State College is asked to propose several hypotheses on photosynthesis from observations of plants. Here he is forced to face "situations where, in order to resolve each situation, he must have an idea or ideas of his own."[5] Thus the activity provides the object lesson that in science, as in all human affairs, the power and limitations of the discipline are determined by and lie within the range of *human creativity*.

The adjustment of the individual to our rapidly expanding technical society calls for an increasing number of decisions that are aided by a laboratory background. For instance, a bathroom scale might be advertised as "guaranteed accurate within ½ of 1% at every point on the dial." The photograph of the dial shows the pointer width to correspond to ½ of the smallest divisions—½ lb! I am confident that the students at Antioch College who perform the experiment on estimating and measuring distances[6] are more likely to make the appropriate judgment as to the claims in the advertisement than students who had no such experience.

If the individual, as a citizen and a consumer, is to make the best use of the scientific facts, principles, methods, and attitudes, it is important that his mental processes be rooted in the real world. Without the direct contacts with the materials and methods of science as buoys, the channels of abstraction become treacherous indeed.

I would like to emphasize that I do not believe that just *any kind* of laboratory work is better than none. My strong plea for the restoration of the laboratory to its rightful position in General Education is valid only in terms of the *right kind* of laboratory activities.

A successful program of laboratory instruction is operationally dependent on the care with which the objectives are formulated; on the nature and type of activities; on the manner in which they are

[5] Department of Biological Science, Michigan State College, *Guide for Laboratory Studies in Biological Science,* Michigan State College Press, East Lansing, 1949, p. v.

[6] G. E. Owen, "Some Contributions the Physics Laboratory Can Make to General Education," *Am. J. Phys.,* vol. 17, pp. 270-272 (1949).

translated into practice; and on the effective use of evaluation instruments.

OBJECTIVES OF LABORATORY INSTRUCTION IN GENERAL EDUCATION

The disparity that exists between objectives and practices is a well-known phenomenon at all educational levels. Joseph J. Schwab has described the situation realistically:

> . . . . The unattainable and generally millennial character of these objectives is almost sufficient guarantee that they will appear only in the printed list and not in the graduating student nor even, to any great extent, in the methods and materials.[7]

If the laboratory work is planned within a *reasonable* framework of objectives, there is a greater likelihood that these will be achieved, at least partially. Evidently, the general objectives for the laboratory must not conflict with the course objectives. In general, there is little danger of this happening. The objective that stresses the cultivation of good citizenship is not likely to be seriously impaired by laboratory work, unless the directions for each exercise point out specifically the need of being nasty to one's partner! There are a number of general laboratory objectives on which there exists substantial agreement.

Some of these objectives are:

1. To illustrate and give meaning to lectures, discussions, and text.
2. To develop skill in accurate, independent, orderly observation.
3. To demonstrate the relationship between facts and inferences.
4. To provide practice in planning and carrying out an experimental problem.

However, the general objectives, no matter how modest, must be developed into a detailed blueprint for classroom action—a list of specific objectives. And in this respect the general educator can learn a great deal from the vocational school teacher and his job analysis technique. Perhaps the success of specialized training is due largely to this step-by-step translation of general goals into discrete tasks. This is *the* neglected area in General Education. One seldom sees in print or hears discussed objectives which are formulated in terms of the students' behavior traits, either in abstract or performance situations.[8]

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[7] "The Science Programs in the College of the University of Chicago—Natural Sciences 1, 2, 3," in Earl J. McGrath (ed.), *Science in General Education*, William C. Brown Company, Dubuque, Iowa, 1948, p. 87.

Let me illustrate the transformation of a general objective into a laboratory activity. Suppose the objective is "to develop skills in the use of the controlled experiment." One specific objective might be stated as "the skill to recognize the adequately controlled situation in investigating the effect of a single factor."

A large number of pendulums might be displayed, with different length suspensions, different bob sizes, materials, and masses, and the student might be asked to select the pendulums to be used in determining whether or not the period is a function of the bob mass. The evaluation of the specific objective can be readily carried out by either a paper-and-pencil or a performance test item. I have given elsewhere many examples of developing the laboratory program in terms of specific objectives.[9]

THE NATURE AND TYPES OF LABORATORY ACTIVITIES

The division of instruction into lectures, discussion, laboratory, etc., is an arbitrary arrangement, and sharp lines of demarcation are difficult to establish between the various methods. There is a considerable latitude among science teachers as to the interpretation of the nature of laboratory work in General Education. However, I believe that the following definition of a laboratory activity has operational validity and would be acceptable to many science teachers: *A laboratory activity is one in which the student gets first-hand sense experiences with materials, phenomena, and methods of science.*

For example, going to a quarry to collect fossil specimens is a laboratory activity, but viewing slides or photographs of fossils is not. Thus laboratory activities do not have to be all quantitative. This fall the first assignment in my Natural Science course was:

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[8] Two major contributions in this area are these publications by Prof. Leo Nedelsky: *Testing for Specified Objectives of Physics Teaching,* The College and Examiner's Office, University of Chicago, Chicago, 1951; and "Formulation of Objectives of Teaching in the Physical Sciences," *Am. J. Phys.,* vol. 17, pp. 345-354 (1949).

[9] Haym Kruglak, "Some Behavior Objectives for Laboratory Instruction," *Am. J. Phys.,* vol. 19, pp. 223-225 (1951).

"Go out for the next three nights and observe the moon. Write a brief report on your observations." The range of the number and accuracy of reported observations was tremendous. Some students looked but "saw" practically nothing; others were extremely observant and methodical in recording their findings. The classroom discussion on the moon that followed the activity was quite lively.

For maximum effectiveness the laboratory work must be purposeful, carefully integrated into the course in terms of subject and student objectives, appropriate in difficulty, should deal as much as possible with familiar phenomena, and should concern itself with representative materials and methods of science. I believe that when I have my students determine the percentage of acetic acid in household vinegar during the same week that the lectures deal with the ionization theory, they are engaged in a laboratory activity that is closely related to the objectives of the course; the exercise is typical of the methods and materials used by the chemist; the phenomenon of neutralization is familiar through class discussion. The techniques are not too difficult, since the students had had a previous exercise on indicators and various ionic and non-ionic solutions.

The type, length, and difficulty of a laboratory activity are directly related to the specific objective to be achieved. Thus laboratory activities may range from a relatively short, easy exercise to a fairly complex experimental project that requires several weeks for completion. It is not difficult to devise activities in which the student acquires familiarity with materials, simple apparatus, and techniques of science. Many conventional laboratory exercises perform this function satisfactorily. For example, the experiment on determination of the density of regular and irregular solids might be used to concretize the definition of density, to give the student experience in the use of a balance, metric rule, graduated cylinder, overflow can, and to illustrate simple object-to-symbol and symbol-to-object translations.

But the real problem of laboratory teaching is to devise experiments which will take the student from problematic situations of a simpler kind, through more difficult experiments, to discovery projects approximating original research. The design of appropriate exercises is severely hampered by the student's limited background in science and by the often limited space and instructional time assigned to the General Education science laboratory. The problems must be such that they can be carried out with relatively simple and inexpensive apparatus; be difficult enough to challenge the best student, but not so hard as to discourage the average member in the class; the results must be clearcut and capable of unambiguous interpretation, and the investigation should illustrate the manner in which typical experimental methods are used.

The often used experiment on the factors affecting the period of the pendulum is a good illustration of the simpler type of a problematic laboratory activity. This exercise can also be put to good advantage in demonstrating the cooperative or "team" research so common in most of the contemporary laboratories. I am satisfied that the pendulum experiment is feasible at the most elementary level, since I have used it successfully with high school students.

A more difficult experiment on the radiation from different types of surfaces was described by G. E. Owen.[10] Here the problem is purposely loosely worded so that the student gets the experience of restating the purpose of investigation in more precise terms; the apparatus is simple and easily obtainable; the problem is elementary, but not narrow; the results of all are acceptable; some of the findings pose additional problems leading to further inquiry.

To devise laboratory exercises suitable for General Education is a time-consuming, strenuous task. There are few laboratory manuals by major publishers. The so-called "experiments" in conventional manuals are practically worthless if used "as is." H. I. Schlesinger indicated how such exercises can be modified to meet the needs of General Education.[11] Thus the experiment on density is rewritten so as to select a given metal from a group of specimens. Since density alone is not sufficient to identify a metal, the student has to look up other properties and devise supplementary tests for verifying the original conclusion.

By and large, the instructor of the course has to depend on his own ingenuity in developing appropriate laboratory activities. The simpler exercises for illustrating textbook and other reading material can be developed by the average instructor without too much trouble. On the other hand, to devise an experiment which will simulate in an elementary fashion the scientist's struggles with an original problem is a task which challenges the most astute and experienced science educator.

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[10] "Some Contributions the Physics Laboratory Can Make to General Education," *Am. J. Phys.*, vol. 17, pp. 270-272 (1949).

[11] "The Contribution of Laboratory Work to General Education," *J. Chem. Educ.*, vol. 12, pp. 524-528 (1935).

The professional literature occasionally gives some examples of effective problems suitable for students' investigations. Alyea, Schlesinger, and Owen have given excellent descriptions of the type of experiment which is likely to make a maximum contribution to the students' understanding and use of the experimental methodology.[12] Although I disagree with Haun's[13] highly formalized and oversimplified steps in solving a problem scientifically, he is to be commended for incorporating into his laboratory manual a section on "scientific method" experiments. He has also included an interesting list of projects carried out by his students first at the University of Kansas City and now at Drake University.

There has been continuous criticism of the so called "cookbook" experiment as a sterile pedagogical device. The ideal teaching situation for a student in science is to "see" an interesting problem, formulate it, plan the investigation, carry it out independently, and draw conclusions from the experimental evidence. In practice the student in General Education science courses will need "crutches" for periods which will vary in accordance with interest, drive, intellectual ability, and previous experience. A gradual development of the student's ability to walk independently along the difficult path of scientific inquiry calls for a progressive diminution in the number and the explicity of directions.

I believe that under certain conditions some "cookbook" directions might even be desirable. This is particularly true of the laboratory activities in which one of the intermediate steps is a technique which does not contribute much to the principal objectives of the exercise, and on which the student would waste much time without specific directions. I do not feel that giving my students detailed directions on operating the analytical balance and for oxidizing the magnesium sample interferes in any way with the attainment of the specific objectives of the exercise on the Law of Definite Proportions. It is only when a laboratory manual provides a complete blueprint for doing a problem to which the answer is known to the student *and* claims to teach him the "scientific method" that I cry out: "cookbook!" Thus, we should apply the sound pedagogical principle in the matter of laboratory directions as elsewhere; offer generous help at the beginning of the course, provide moderate guidance when the student has gained familiarity with materials and methods, and finally in the last stage of maturation give directions sparingly and reluctantly.

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[12] Hubert N. Alyea, "The Single-Science Course at Princeton University," in Earl J. McGrath (ed.), *Science in General Education*, William C. Brown Company, Dubuque Iowa, 1948; H. I. Schlesinger, *loc. cit.*; G. E. Owen, *loc. cit.*

[13] Robert Ray Haun, *Laboratory Manual to Accompany Foundations of the Physical Sciences Course*, University of Kansas City Book Store, Kansas City, Mo., 1947.

I would like to take this opportunity to urge science teachers to publish promptly in professional journals those laboratory exercises and experiments which they developed and found useful in carrying out the objectives of General Education.

Many institutions offering science courses without laboratories make extensive use of lecture demonstrations, slides, films, models, and charts. All these devices are laboratory "substitutes" by definition only. In my opinion there are *no* substitutes for firsthand sense experiences. Some evidence from World War II training programs has been cited to support the claim "that good demonstration experiments can accomplish most, if not all, of the ends of laboratory work in an elementary course. We recommend that in lieu of laboratory work an adequate number of good demonstration experiments be given with the course."[14] On the other hand, a group of Michigan graduate students[15] evaluated several schools in the armed forces and attributed part of their success to the small gap between theory *and* practice and the strong emphasis on sense experiences.

A number of science instructors told me in effect: "We know that laboratory is important, but we operate on such a limited budget and with such a restriction of space that it is impossible to have anything but lecture demonstrations. It is, however, better to offer this course than nothing at all." I have found it possible to provide some form of participation by all or large majorities of students even in a large lecture room.[16] A cigarette manufacturer advertised a mildness test to be used by the individual smoker. The students in my Natural Science class were asked to read the advertisement and devise an experimental procedure for testing the validity of the claims. Class discussion followed the next day and a plan of investigation was agreed upon. The experiment was carried out during the third meeting, with all smokers participating, and some of the nonsmokers acting as blindfolders, tellers, recorders, etc. Thus out of a class of sixty all had to make some sort of plan, and some thirty-odd students participated directly in some capacity in the carrying out of the investigation.

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[14] Earl J. McGrath *et al.*, *Toward General Education*, The Macmillan Company, New York, 1948, p. 96.

[15] R. Schorling, "Implications of the Training Program of the Armed Forces for Civilian Education," *Science Educ.*, vol. 31, pp. 81-99 (1947).

ADMINISTRATION OF LABORATORIES

If the laboratory activities are to make their maximum contribution to the student's *understanding* of science, a suitably organized and carefully balanced program is needed.

In the laboratory, no less than in any other teaching situation, the instructor is the key to success. It is clear, then, that the instructor must have a thorough understanding of the general course objectives as well as of the specific objectives of the individual laboratory activities. Since in most of the larger colleges graduate teaching assistants serve as laboratory instructors, it is necessary for the person in charge of the course to provide some kind of in-service training.

I go about "indoctrinating" my new teaching assistants in the following manner. First, I go over the general objectives in terms of the subject matter and the type of students that generally enroll in the course. Then the more general objectives of the laboratory are outlined. Next, each laboratory activity is discussed in terms of its specific objectives, the type and availability of apparatus, and the possible difficulties that might be encountered by the students. The assistant is warned not to lecture at all, but to act as a consultant on an individual basis. Too much talking has been a glaring fault of laboratory teachers, from full professors to first-year graduate students. They tell the students so much about the forthcoming experiment that there is little time or curiosity left to carry out the work. It is usually necessary to remind the assistant several times that the *laboratory time belongs to the students.*

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[16] Haym Kruglak, "A Natural Science Class Accepts the Challenge of Philip Morris!" *Science Teacher*, vol. 18, pp. 206-207 (1951).

The laboratory assistant is also taken to the laboratory and storeroom and asked to look around and get acquainted with the apparatus and utilities. He is also instructed in the method of procuring supplies. At least once a week, I visit the laboratory, preferably shortly after the new activity for the week has begun. Any problems that arise in connection with the activity are discussed and suggestions made at the time when they can remedy the situation. For instance, if the assistant reports that a given experiment is too long for the best student, then appropriate steps can be taken to cut it down for the following laboratory meetings. The lack of direct supervision of teaching assistants is one of the sad facts of college teaching; it accounts in part for the degradation of the conventional laboratory.

The size of the laboratory section depends on the available space, staff, apparatus and the type of activity. At Minnesota, laboratory sections in the Physical Science course are limited to sixteen students. A mature staff member could probably handle up to twenty-five individuals, but with questionable amount of efficiency, since in a two-hour session each student would have less than five minutes of the instructor's time. I do not think that a laboratory section ought to have more than twenty students, particularly if they are to work *singly*.

Since laboratory work is based on *performance* with apparatus and materials, a partner is likely to be more of a hindrance than a help. There is certainly more random talk and less purposeful activity when the responsibility for the task at hand is shared by two people. There are of course some activities that require simultaneous reading of two instruments, as in the exercise on the melting curve for naphthalene. But I found that with the exception of one or two exercises, it was possible to have each student work independently, quietly, and productively. I have also observed cases of three and more students working on a common exercise, with much confusion and questionable learning outcomes, and with a *low* signal-to-noise ratio.

The apparatus in General Education laboratories should be as simple and functional as possible. A simple astrolabe assembled by the student from mailing tubes or dowels is preferable to a professional theodolite, although the latter could be used in special investigations if the institution is willing to spend the money on such luxury items. Wherever possible the experiments should deal with equipment and materials that are commonly available in the student's home or community. This will impress on the student the fact that scientific investigation need not be confined to the school building, to the exercises in a printed manual, and to the apparatus from a scientific supply house. Thus the construction by every student in my Natural Science 4, of a working diffusion cloud chamber out of a coffee can, peanut butter jar, cotton, alcohol, and dry ice, solved my problem of providing a laboratory activity in modern physics. At the same time the exercise conveyed to the student the possibility of making a piece of crude but working apparatus out of everyday materials and supplies.

One of the richest sources of supplies for laboratory activities is found in magazine and newspaper advertisements. The advertisers' appeal to "scientific" tests provides students an opportunity for verifying the claims experimentally and for discussing the defective design of the reported investigation. A recent advertisement by a soap manufacturer suggested a "hand-heat test" by the consumer. Exploring this "test" will provide a laboratory activity for my Natural Science 5 class next quarter either during the regular laboratory period or as a "participation" experiment during the lectures on acids and bases.

EVALUATION

One of the most perplexing difficulties of General Education is the scarcity of evaluation studies. It is all very well to plead eloquently for a new approach, for a reexamination of objectives, for rejection of old methods, but a change is not justifiable unless there is some experimental evidence that the proposed program will be definitely superior to the old. Since General Education courses differ from the conventional, specialized courses, it is apparent that new evaluation instruments are needed. In the final analysis a course is evaluated not in terms of the objectives but in terms of student performance either in or out of school.

Evaluation studies on laboratory work in General Education are practically nonexistent. It is easy for the opponents of laboratory to justify their stand on the basis of scattered and generally inconclusive evidence from studies comparing the lecture demonstration with the individual method of instruction. What is needed for an effective evaluation of laboratory work is (a) a blueprint of specific objectives, (b) valid instruments appropriate to the measurement of the outcomes based on these objectives, (c) investigations carried out in accordance with the principles of modern experimental design.

The laboratory report is the most common way of appraising the student's progress in the laboratory. Under optimum conditions the report is a valuable teaching and evaluation device. Its chief purpose is to teach the student how to describe in clear, brief, technical language the carrying out of an experimental investigation. The instructor judges from the report how well the student collected and analyzed the data, to what extent the conclusions were consistent with the results, and the degree to which the report conforms to the general notion of good technical writing. Under such conditions the laboratory report parallels the process of writing a paper by an experimental scientist. When the report is read by an experienced science teacher, who had also observed the student's performance in the laboratory, a valid and reliable estimate of the grade is possible. On the other hand, when a report is read hurriedly by an assistant to whom the essential criteria have not been pointed out and who paid little attention to the student during the laboratory period, then the report usually is a perfunctory, meaningless chore for both the writer and the reader. I am not so sure that copious and frequent reports ought to be required from students in General Education. I generally have my students make their calculations in class and show their results to the instructor. Each laboratory exercise has a number of applications based on or related to the activity. The students answer the questions and work the problems outside the class and hand in the work at the next session. Thus in the experiment on melting points one of the simpler homework exercises is: "Give three examples of substances which have definite melting points. Look up and record those values."

The optimum value of a laboratory report depends on (a) the student's understanding of what constitutes a good report, (b) the care with which the report is read by the instructor, (c) the thoroughness of the follow-up by the teacher to see that the student understood the corrections, and (d) the instructor's alertness in the laboratory.

In some institutions the questionnaire has been used to get the students' reactions to the laboratory. At Harvard "the students were overwhelmingly opposed to individual laboratory work."[17] At Northwestern on the other hand 64% of the students in the course were in favor of the correlated laboratory.[18] A Minnesota questionnaire on laboratory exercises indicated that the "cookbook" experiment on acceleration of a falling body was most helpful in clearing up textbook material; that the gas thermometer was the most difficult exercise, and that the visit to the observatory was most interesting and also least difficult. But there is some danger in following student opinion too closely. The students tended to rate the exercises which required a great deal of original thinking as uninteresting.

Practically none of the written tests in science have items designed to measure specific laboratory outcomes. Since the conventional tests deal essentially with textbook information, it is not surprising that the effects of laboratory instruction are so difficult to demonstrate. I try to work in a few direct questions on laboratory work in the final examination of my course. A typical item is reproduced below.

> A student looks through a telescope with his left eye. He sees an image of a scale on the wall as shown in Fig. 1. His naked right eye sees the same scale as in Fig. 2. (Figures of the scale seen by each eye are carefully drawn side by side.) The magnifying power of the telescope is (a) 1.75, (b) 1.00, (c) 2.5, (d) 3.0, (e) 1.4

In the Natural Science 7, 8, 9 sequence at Minnesota, laboratory performance tests are given as part of the midquarter and final examination. A student moves from station to station and looks at a slide under a microscope, or examines a dissecting pan with some cell, organism, or tissue. A card with five alternative test items, based on the displayed material, is placed nearby. The student is allowed to examine the specimen, decide on the correct response and enter it into a form which he carries around. Some fifty items constitute the midquarter "practical" and one hundred items the final. A representative item in the zoology section consists of a microscopic slide of a pig's spermatozoa. The item card reads:

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[17] Fletcher G. Watson *et al.*, "Science in the General Education Program at Harvard University," in Earl J. McGrath (ed.), *Science in General Education*, William C. Brown Company, Dubuque, Iowa, 1948, p. 108.

[18] Professor Clement Henshaw has recently visited a number of colleges. He reports that there seems to be an increase in the emphasis on laboratory work as one travels westward.

The cells shown in the field are produced in the:
A. interstitial tissues of the testis.
B. tubules of the testis.
C. epididymis of the testis.
D. Cowper's gland.
E. prostate gland.

The student must recognize what the cell is and what part of the organism produces it.

In the botany part of the course a typical item shows the prothallus of a fern under a low-power microscope. The card next to it reads:

What chromosome number is represented here?
A. $2n$
B. $2n$ and $1n$
C. $1n$
D. $2n$, $1n$, and $3n$
E. $3n$

To get the correct answer the student must be able to recognize the prothallus and know the life cycle of the fern. Most of the examination items are devised and set up by the teaching assistants in the course. Unfortunately, no systematic studies have been made with the results of the above tests.

In the Physical Science course, I have occasionally given performance examinations. Two typical items are reproduced below:

GIVEN:	Three lenses, an optical bench, a telescope scale, a card holder, a card.
PROBLEM:	To make a telescope and to find the magnifying power of the telescope. Draw a sketch showing the relative position of the eye and the lenses. Label the lenses in the sketch according to the labels you found on the lenses.

Given: Matches, bunsen burner, tripod, gauze, evaporating dish, NaOH, HCl, litmus paper, stirring rod, eye dropper, beakers, test tubes, other chemicals as decoys.

Problem: Prepare a pinch of table salt.

During the fall and winter quarters 1948–1949 performance tests were administered to students in the Natural Science 4 and 5 during the last laboratory session. The scores were correlated with the final examination grades in the course, with the total points earned during the quarter exclusive of laboratory, and with the instructor's laboratory grade. The results are shown in Table XI-1.

Table XI-1. Correlations between various measures of achievement in Natural Science 4 and 5, University of Minnesota 1948–1949

	Nat. Sci. 5, N=80		Nat. Sci. 4, N=71		
Variables	X_2	X_3	X_2	X_3	X_4
X_1=laboratory performance test	0.41	0.49	0.34	0.40	0.66
X_2=paper-pencil final theory test		0.91		0.95	0.51
X_3=total theory achievement					0.54
X_4=laboratory grade assigned by instructor					

The correlation between the laboratory performance tests for the two quarters was 0.30 (N=55)

The positive correlations between the theory tests and the laboratory performance tests indicate that the two are related through a common vocabulary, principles, etc. However, the fact that the correlations are low points to the conclusion that the pencil-paper theory tests and the laboratory performance test measure different instructional outcomes. The correlation of 0.66 between the performance score and the laboratory instructor's grade is about as high as can be expected, considering the highly subjective nature of the latter. It is interesting to note the low positive correlation between the performance tests for two quarters. The first quarter's work (Nat. Sci. 5) was chemistry; topics from astronomy, mathematics, and physics were treated during the second quarter.

Other investigations also indicate that in order to assess instructional laboratory outcomes, it is necessary to devise special tests.[19]

NEEDED RESEARCH

The issues of laboratory work in General Education will not be resolved except by carefully designed experimental investigations. Some questions that must be answered are:

1. What specific contributions does laboratory instruction make to the General Education science courses?
2. What type of tests will give the most valid evaluation of laboratory work? How are they related to other evaluation instruments?[20]
3. Which of the methods is superior; the conventional, the demonstration, or the problem-solving?
4. What activities in the laboratory are most effective in reaching the objectives of General Education?
5. What is the optimum size of a laboratory group?
6. What is the optimum number of students working as a team on one exercise?

Evaluation of laboratory work in terms of the student's behavior is a difficult job; it must be pursued continuously and systematically.

SUMMARY

The provision for firsthand sense experiences is particularly important in General Education. Without appropriate laboratory activities, the student gets a distorted view of science.

Meaningful laboratory exercises can be developed if the objectives of the course are formulated in terms of behavior traits in symbolic and performance situations. For maximum effectiveness, laboratory work must be coordinated with other activities; proceed from simple experiences to more complex problematic situations; display typical objects, processes, and methods of science.

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[19] Haym Kruglak, "Experimental Outcome of Laboratory Instruction in Elementary College Physics," *Am. J. Phys.*, vol. 20, pp. 136-141 (1952).

[20] In a delightful description of the experiences of examiners with practical tests at Cambridge University some sixty-five years ago, the author concludes with a statement which is as true today as it was then: ". . . and the most disquieting part of the matter was that very often candidates who seemed from their written work to have real knowledge of their subject made the grossest possible blunders when confronted with the actual apparatus of which they were able to furnish perfect diagrams and descriptions on paper." (L. R. Wilberforce in *A History of the Cavendish Laboratory*, Longmans, Green & Co., London, 1910, chap. IX.)

A successful laboratory program in General Education depends largely on the industry, ingenuity, and planning of the course director in devising purposeful activities, in supervising laboratory assistants, and in evaluating the instructional outcomes.

Laboratory reports can be reliable evaluation instruments of certain objectives under optimum conditions. However, there is also need for paper-and-pencil and performance tests to measure specific outcomes of laboratory instruction.

In view of the effort, time, space, and cost of operating laboratories, there is an urgent need for experimental investigations on laboratory teaching. Little evidence exists as to the specific contributions of laboratory, the most effective activities, the optimum number of students in a section, and the size of the "partnership" groups for optimum productivity. Until more valid information becomes available, the quality of laboratory work will continue to reflect the moods and opinions of administrators and teachers rather than the needs of students.

Part Four

THE SOCIAL SCIENCES

HILDEN GIBSON

CHAPTER XII. *THE CASE METHOD IN HUMAN RELATIONS*

FOR the past seven years a group of us at the University of Kansas have enjoyed a teaching experience which has been both exhilarating and frustrating. We have been trying to teach "human relations" by the "case method." Sometimes we think we are getting somewhere; at other times we are beset with doubts. But it is always fun, and we proceed optimistically on the theory that where there is so much intellectual stimulation for the professors there must also be some for the students. By and large the students seem to agree with us. There are times when some of our colleagues must think us slightly mad, but they have been tolerant without end, and for this we are grateful.

It all began during the academic year of 1945–1946 when Professor Carroll D. Clark, chairman of the department of sociology, was selected to spend the year as a participant observer of the human relations program inaugurated that year in Harvard College under the leadership of Professor Wallace B. Donham, retired Dean of the Harvard Business School, and of Professor Elton Mayo. The following year I was privileged to have the same experience, and I was joined during the second half of the year by Professor Edwin O. Stene of the Department of Political Science. During the first half of the third year Professor Marston McCluggage of the Department of Sociology was in residence at Harvard, and the second half of that year Dean Leonard Axe and Professor Edward Nelson of the School of Business participated. Thus over a period of three years, six men from three different departments of the Kansas faculty participated in the Harvard program.[1] These men upon their return constituted the core of the University of Kansas program, and still remain so, though we have now been joined by a number of our colleagues whose interest has been aroused since our return.

In 1947 an Office of Human Relations was established by the then Chancellor of the University, Deane W. Malott, whose interest and whose previous association with Dean Donham made the program possible. In 1950 this Office of Human Relations was transformed into a Department of Human Relations within the College of Liberal Arts and Sciences. The department now offers four courses for undergraduates and seven seminars for graduates. The department offers no majors at either the graduate or the undergraduate levels, but it does offer a minor for students seeking a doctorate in one of the social sciences or in education. So much for institutional history. Now what are we trying to do?

What we are trying to do could be described in many ways. All would represent an element of truth and yet all would be equally incomplete and misleading. We could say, for instance, that we are trying to teach "social skills." Or we could say that we are trying to develop a new approach to social science whose characteristics partake more of the clinic than of the laboratory. We could say that we are trying to teach useful ways of thinking about human beings and their relationship with one another. Or we could say that we are trying to help the student understand himself. If we refuse to shrink from suspicions of philosophical pretentiousness implicit in the use of the phrase, we can and must admit that in some way we are raising the eternal question of "What is the good life?" and trying to help the students find an answer. All these things we are trying to do and yet no one, nor all of them together, is an adequate formulation of our objective. Nor have we ever found one.[2]

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[1] During this same period a number of men from the faculties of Colgate and Ohio University, and one each from Worcester Polytechnic Institute, the University of Washington, and Texas Christian University were also present as participant observers at Harvard. In general, the development of these institutions has followed broadly similar lines to that taken at Kansas.

[2] Perhaps I should pause here to admit that when I say "we" I imply a uniformity which does not exist. Most of my colleagues would share most of the aims indicated above and some would share all. Yet each would undoubtedly reveal a different emphasis in his own classroom.

Even though we cannot define the ultimate objective of our teaching with the neatness one could wish, it is still possible to describe the process, at least as it operates in my own classroom, in such a way as to indicate some of the aims we seek to achieve. This I propose to do, but before I begin I should like to try to describe some of the basic thinking that underlay the course which Professor Donham inaugurated at Harvard. For that course is our genesis. For good or for ill Professor Donham must bear the onus of paternity.

Professor Donham offered the course in Harvard College at the invitation of President Conant, whose attention had been caught by some observations made by Donham in the latter's book *Education for Responsible Living.* In this book Donham had pointed out with some acidity that whereas an examination of the catalogues of American colleges and universities would reveal them to be teaching almost every other conceivable subject, they were not even trying to teach human relations, which, in the present parlous state of the world, is the most important subject of all. It was self-evident, Donham felt, that the problems which threaten our laboriously created civilization are social rather than technical. They revolve around the question of whether mankind will learn to live together, or destroy itself. And the matter of living together is no longer one that can be safely left to chance. It can be and must be taught. In 1945 he was invited to try.

At the root of Professor Donham's thinking was his conviction that facility in human relations is not so much a matter of verbalized knowledge as of "social skills." These skills are not susceptible of transmission by ordinary didactic procedures. This is true for a variety of reasons, not the least of which is that by no means all these skills can be clearly verbalized. In that sense they are akin to the skills possessed by artists or craftsmen. But here a difficult problem of pedagogy arises. If these skills cannot be verbalized how can they be taught, for how can we teach what we cannot say? But, argued Donham, even though they cannot be didactically taught, they can be acquired. In life they are derivations of experience, and the problem then is to construct a learning situation from which the student can himself derive them. This implies that some means must be found whereby experience can, so to speak, be foreshortened, so that students can undergo within relatively short time some of the experience which would otherwise come only with the passing of years. The answer to this need Donham felt was the "case."

Now "cases" as we use that term, are descriptions of real life situations. Names and places may be and are, of course, disguised, but the facts must be real, and moreover they must be reported with a maximum of accuracy and a minimum of intrusion of the case writer into the situation described. They are, in essence, an attempt to transport a segment of life into the classroom. They are the closest substitute for experience we can achieve.

There is nothing unique to the Harvard human relations group, of course, about the use of cases. The method has been used for many years in law and in the social sciences. But what was unusual about Donham's approach was his insistence on the *way* in which the case should be used and the function it should serve. To Donham the purpose of the case was not to point a moral or to illustrate a point, which is, of course, the way in which a case is ordinarily used. On the contrary, as he saw it, the case must present not a conclusion but a problem with which the student is forced to deal, and the value to the student derives not from "memorization" of the conclusion but from the *process of solution.*

This view carries certain implications for the characteristics which a case suitable for use in human relations should have. It should contain a "responsible person" with whom the student can be invited to identify himself, and preferably the situation should be near enough to the student's own experience so that he does not find such identification impossibly difficult. It should contain an "action point," a decision to be made, and the case must be handled in such a way that the student rather than the instructor is forced to grapple with the problem and make a decision. But will the student make the *right* decision? Here the instructor attempting to learn the use of the case method is confronted not only with a major problem of pedagogy but likely also with a crisis in his own psychological orientation. Our habit and our training is to "tell them." We after all are the ones who *know*. Else why would we be professors? But when we try to "tell" the student we are immediately up against the problem of "knowledge about" as compared to "knowledge of acquaintance." That there is a vast and profound difference between the two all who have thought about the matter will surely agree. The former can be "taught," the latter can derive only from experience. And it is the latter which we are trying to achieve in human relations. Hence we are forced to rely upon a pedagogical procedure for which we have unfortunately been able to contrive no better name than "nondirective teaching." The instructor must strive to restain his own drive to dominate the situation in the hope that the students will then take the initiative. He must, in essence, say to the students, "What do *you* think about this?" But this cannot be a mere device. If it is, the students will immediately sense it as a sham and react accordingly. The teacher of human relations must not only be willing to *say* to his students that there are no experts in human relations, himself included; he must *mean* it. He may admit to the students that possibly he has had somewhat more experience than some of them, and that perhaps he has slightly more familiarity with certain aspects of thought than they. In fact, he had best admit this, else the students will sense in him a modesty that is false because it is a denial of plain reality. But let there be in him even a trace of feeling that "I am the learned expert who has the answers," and the students will quickly sense the authoritarian reality behind the democratic facade. They will react as one might expect. They will quickly abandon the attempt to think a problem through for themselves, and will try instead to determine what the instructor wants them to think. It is easier that way, and after all, he is the fellow who passes out the grades, is he not? The teacher of human relations must have a genuine humility, and it is desirable that he should share the reverence of Justice Holmes for "the simplicity that lies on the other side of the complex."

Such then was the general orientation of the Harvard course, which as I have said was the genesis of the human relations program at the University of Kansas as well as of those at Ohio University and Colgate. What has been said here is, of course, an oversimplification and yet I have tried to do essential justice at least to the main ideas. With this over-all orientation in mind let us look at some of the things we try to achieve in the classroom.

Undoubtedly one of the principal goals with which everyone engaged in the teaching of human relations is concerned is the development of sensitivity to people. We may call this by a variety of names. Thus we may speak of "skill in intuitive identification," or of "perception in depth," or of "regard for the worth of the human personality." But regardless of the phraseology the meaning is much the same. We are saying that we are trying to make the student sensitive to other people and to the relationships that exist between them and to increase his understanding of them. Obviously if he is to understand, he must think carefully about human situations, and this thinking must be not spasmodic but habitual. Human relationists no less than other academicians have a yearning for respectability, and one of the earmarks of such respectability seems to be the reduction of conceptions and aspirations to a rather prosaic vocabulary heavily flavored with traces of Greek or Latin derivation. So we call this process the development of the *habit of diagnosis*.

The word "habit" is used advisedly. In no sense do we want the student to memorize a verbal platitude such as, "One should think about a situation before acting." The latter would at best represent "knowledge about," probably only to be used by the student in a final examination. But how does one inculcate a habit of thought? Unfortunately we know no better way than that by which any habit is acquired—by constant repetition. But we do not mean repetition of the verbalized concept. We mean repetition of the process. Therefore discussion of the first case used in the course is apt to begin with some such question as, "What do you know about Ralph Stetson?" and the discussion of almost every subsequent case is apt to begin with a similar question.[3]

The students probably will not know much about Ralph Stetson, even though the mimeographed case is in their possession and they will have had at least twenty-four hours in which to study it. To dig out what facts are given in the case is an onerous chore. It is easier to grasp only the general outline of the situation and then to prescribe; Stetson ought to do this, or Stetson ought to do that. After all, this is easier and it is moreover typical of the way in which not only undergraduates but most of the rest of us respond to situations about us. But rarely do the prescriptions of any two of the students coincide, and out of this welter of confusion and contradiction comes (we hope) the beginning of learning. The students gradually begin to see that solutions of situations offered with little or no reference to the facts of those situations amount to little more than statements of personal inclination.

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[3] The case of Ralph Stetson involves the problem of a young Navy veteran who applies for assistance to a veteran's counseling service. He does not ask for guidance but inquires how he can get in touch with the dean of the medical school so that he can get enrolled, where he can get a job, and where he can buy a house. Miss Hutchins, the counselor, gives him the telephone numbers of the university, an employment agency, and a real estate man, and he goes on his way. Within a very short time he has become embroiled in a number of difficulties, not the least of which is a financial indebtedness of more than ten thousand dollars. He returns to the counseling service and Miss Hutchins is faced with the problem of what to do.

So gradually, in case after case, the students begin to feel the necessity of looking at the facts of a problem before acting, and it is our hope that, repeated often enough, the process of diagnosis will become habitual. In the course of this procedure the student can scarcely help but become aware of the terrible complexity of even the simplest of human relationships, and of the interrelatedness of all phenomena. They learn laboriously to note all the facts because they discover from experience, frequently painful, that sometimes the "key" to a situation is something which they may have first regarded as of trifling import. And they begin to learn also that effectiveness in human relations is less a matter of heaven-sent inspiration than of diligent skill in analysis of situations.

But it is not sufficient that the student learn to take account of the facts in a situation and to comprehend their interrelatedness. He must also proceed to the same kind of thinking about people. This is difficult. It involves problems that are not only intellectual but emotional as well. Not the least of the latter is that of *accepting people as they are.* The commonest method of dealing with any human situation, of course, is to prescribe that someone else should be different than he is. One's irritable wife should be less irritable. The domineering boss should be more gentle, etc. It is not surprising therefore that a considerable part of class time especially during the early part of the course should be devoted to the phenomenon which I call "cussing Stetson."

This "cussing" is apt to range the entire gamut from, "This guy Stetson is just a plain damn fool," to, "I think that we can detect traces of schizoid tendency in Ralph." The former is apt to come from a somewhat older student, probably a veteran, who is annoyed by what he considers to be Stetson's immaturity. The latter almost certainly comes from a student who has recently completed the course in introductory psychology. After each such pronouncement the students sit back awaiting the instructor's reaction. If the instructor succeeds in maintaining reasonable impassivity, expressing neither approval nor disapproval but only calm acceptance of what they say, their first enthusiasm gradually gives way to bewilderment. "What does this guy (the instructor) expect me to say anyway?" But perhaps this too is the beginning of a significant kind of learning. "Maybe it doesn't matter what he (the instructor) thinks. Maybe it's what I think that's important." Then they return to the attack.

Only when they have exhausted their judgmental propensities does the capacity for insight come. Only when the well of moral indignation is dry, can the instructor safely interject the question, "Well, let us assume that everything you have said about Stetson is true, now what is Miss Hutchins going to do about it?" And then perhaps the students can see that their impassioned pronouncements about Stetson have done nothing to solve the problem of Stetson. *His* problem still remains. All they have done is to relieve *their own feelings* about him. And perhaps they have begun to see the futility of judgmental pronunciamentos as solutions for human problems. Have the students learned all this from one case or even a course in human relations? Scarcely. Most of us never learn it in a lifetime. But perhaps they have begun.

But the acceptance of people involves acceptance of *feeling*. The attempt to deal realistically with the problem of feeling may well turn out to be one of the most revolutionary aspects of the "human relations approach" to education. For though almost all sophisticated people would readily agree that clearly enough man is not quite the rational machine which the nineteenth century hoped he might become, nevertheless logic has ever been the core of the university, and the prevalent academic position is still apt to be, "man's behavior is not completely logical—but it ought to be." The exhortation to rationality may not be expressed. In fact it is probably only inferred, but it is there.

Consequently it should not be difficult to comprehend the bewilderment of a student when he enters a classroom where the nonlogical aspects of human behavior are accepted as calmly as the more logical ones, and where the examination of *feeling* is held to be as important and respectable as the examination of intellectual activity. He is startled. This is not what he expects in the rarefied atmosphere of a university classroom. In so far as emotion is discussed in such a place, it is done decently, objectively. He is perhaps used to talking *about* emotion but here he is asked to experience it. He is, in short, asked to try to *feel* how one of the characters in a case feels.

We are aware that this is not always pleasant and we are aware that eyebrows may be lifted in certain quarters at the notion that this is a proper method of teaching procedure. But how else can human understanding be deepened? For here we are confronted with the age-old problem of the relation of emotion to thought. Plato sought to solve the problem by the strategem of stratification, the higher and the lower, the superior and the inferior, the governor and the governed. His scheme has been, no doubt an inspiration to rationalists from his time to the present, and yet at the end of two thousand years those unmanageable passions still persist, for the plain fact is that we are creatures of feeling as well as of thought, and if one is to understand the whole man one must seek to understand his emotional as well as his intellectual side.

But how is this to be done? How can one know what another feels? The student soon learns that this cannot be done by logical processes alone. Sooner or later he falls back upon a process of imaginative identification. In so far as this bears resemblance to any of the formalistic modes of reasoning, it would correspond to rough analogy. "Danny Keith failed to make his fraternity. I failed to make a fraternity once. Therefore Danny's feelings now must be like mine were then."[4] To this extent successful identification depends upon capacity for emotional recall. Recall is of course impossible if the student has never had the experience of failing to make a fraternity. Perhaps he has had an analogous experience, and if so, possibly he can make the transition, but if not, the situation is likely to be hopeless. This is why we repeatedly stress the point that cases should be ahead of the student's experience, but not too far ahead.

The technique of sympathetic identification is not so simple as I have made it seem. It is an emotional process but it is not exclusively emotional. To be sure we are asking the student to learn to "think with his heart," but he must also think with his brain. The student must be made to realize that the analogy between himself and another is never exact. Therefore emotional recall is not enough. He must also learn to analyze, for it is in careful analysis of the points of similarity and the points of difference that completeness of understanding lies. This is, of course, difficult. It means that the student must, as one of the graduate observers of the class once put it, "step into the character, and then out again, step in and step out." Subjective identification must be followed by objective analysis, and this repeated over and over. Only in the internalized process of the mind these procedures will be so rapid that they seem simultaneous.

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[4] Danny Keith is one of the characters in the case called Mu Nu. The problem arises when he learns that his friend and roommate, Ken Andrews has just been selected for Mu Nu fraternity which Danny himself had hoped to make.

Thus our aim is the kind of objectivity that comes not from a rejection of the emotional aspects of human life but from an acceptance of them and an attempt to deal with them within a realistic framework. Even though most of us cheerfully confess to being somewhat fanatical about the "case system," we would not, even in our most ebullient moments, pretend that we are successful in stimulating such a procedure as described above in every student in all cases. If we were we would be considerably better teachers than we are. But no other method of teaching is foolproof either. If the lecturer, for instance, were to take careful cognizance of what proportion of his content actually gets across, he would probably not be overwhelmed with admiration of his batting average either. Our goal in case teaching of human relations is high—nothing less than the humanization of social interaction that can come only from increased sensitivity to others—and if we achieve it only in part we are content.

If one principal aim of our course is the "habit of diagnosis," the second might be described as the "habit of responsibility." The mechanics by which we seek to achieve this second goal are relatively simple; it is execution which is difficult. Cases are so written that each contains what we call a "responsible person," and the students are asked to identify themselves with that person or with that person's position. Thus in the case of Ralph Stetson the question is apt to be, "What would you do if you were in Miss Hutchins' place?" In Mu Nu the question may be, "What should Ken Andrews do about it?"

Our objective is to habituate the student to a feeling of responsibility, and as with the habit of diagnoses our principal reliance is upon constant repetition. But an abstract sense of responsibility is not what we seek. It seems to us that the essence of responsibility is willingness to accept the facts of a given situation and to work from there. This again relates to the distinction between "knowledge of acquaintance" and "knowledge about." Naturally the student tries to escape. Failing that, he next seeks refuge in an academic type of responsibility which though burdensome is still less onerous than real responsibility. "There is," as Churchill is reputed to have said, "a vast difference between talking about what should be done with nineteen destroyers and actually making the decision about what to do with them." We realize, of course, that we cannot completely achieve reality of responsibility, but our aim is to approximate it as nearly as possible, and we can at least require that the student attempt to make a decision within the facts of the case.

This, as I have said, he is naturally reluctant to do, and a typical class ordinarily employs an entire catalogue of escape mechanisms. First and easiest of these is, of course, the "I can't see that there is any problem in this case," device. In rare instances an entire class will take this attitude, in which case there is little for the instructor to do but pass on to another case. But typically he is saved from this expedient by the presence in the class of students who do see a problem in the case and who are eager to discuss it.

Next in availability is the "There's a problem here all right, but nobody can do anything about it" approach. The graduate students who commonly observe my class as part of their work in a graduate seminar have supplied a term for the students inclined to this approach. They call them the "brick wallers," because so frequently the statement of the student seeking to avoid responsibility runs something like, "Nobody can do anything about this Stetson. He'll just have to ram his head into a brick wall until he gets some sense into it." Here we have laissez-faire morality pure and unalloyed, and sometimes the possessor thereof remains obdurate until the end in his conviction that what happens to others is of no concern to him. More commonly, however, he is shamed into silence by the presence of other students more humanely inclined. And sometimes, perhaps, he is even convinced that what happens to others does concern him, not necessarily because of a moral imperative, but simply because it is impossible for him as a social being to escape the effects of social interaction. The insight becomes easier for him as soon as we begin the use of cases having a business or industrial setting, because this type of student usually finds it difficult to think of himself as a counselor, but he can think of himself as a "boss."

Next in order is the "Somebody else ought to do something for this fellow," approach. Commonly this takes the form of, "I think Danny Keith ought to see a psychiatrist," or, "Danny ought to talk this over with the Dean." Usually one or two quiet questions from the instructor will suffice here. "Who is going to get him to see a psychiatrist? Can Ken do it?" or, if it is desirable to draw attention to the social aspects of the matter, "Are there enough psychiatrists?"

Finally there is what we might call the approach *ex deus,* so named because it calls for nothing less than the Omnipotence which would be required to reorder the universe, including the reversal of time itself. Though I seem to speak harshly of it, nevertheless I find the students' use of it understandable in view of the fact that this is precisely the approach which they are expected to take in most of their classes. I do not mean to imply that the academic attitude is irresponsible, but its responsibility is of a different kind. It is a type of social responsibility which arrogates unto itself a sort of overview in time and space. It is not *responsibility within the situation.*

As this attitude is revealed in students' comments the patterns are usually something like these. "Danny's scheme of values is all wrong. He ought to change it," or "What's wrong here is not Danny, but the fraternity system; it ought to be abolished," or "Danny's troubles now are the result of his background; his mother should have given him more love and attention." Again the instructor's questions are designed to restore the reality of the situation. "Can Ken change Danny's scheme of Values?" "Can Ken abolish the fraternity system, even assuming that he wants to?" "What can we do about Danny's background now?" It is better, of course, if some of these objections come from other students, but if not, the instructor is in a position to interject them.[5]

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[5] My friend and colleague Professor Marston McCluggage, whose abilities as a teacher I esteem most highly, rejects the assumption of even this much responsibility by the instructor. He writes: "If the instructor does much of this he assumes the burden of directing the class and they will begin to expect him

The escape into omnipotence blocked, the student is thus finally driven to try to think about what can be done *within the situation as given.* Again we do not claim overwhelming success. Acceptance of reality of situations is no more easily achieved than acceptance of people as they are. The road of pedagogy is rocky enough at best, even when only mastery of objective data is involved. But when such a thing as emotional orientation is involved, then it is bestrewn with boulders. Nevertheless the objective is worth struggling for, because this attitude, we feel, is the basis for constructive thinking not only in individual matters but in social ones as well. Granted that contemplation of the ideal is one of the noblest activities of man, and that the ideal construction of a more perfect society is a thoroughly legitimate function in this most imperfect world, yet the problem persistently remains of how to get from here to there.

At this point I seem to hear the reader muttering, "Yes, but just what do you teach these people?" Our honest answer to that question is that we do not *teach* them much, and yet we are convinced that they *learn* a great deal. If by *teaching* is meant systematic inculcation of a set of "principles" of human relations, then certainly we must confess failure, for I, at least, and I think most of my colleagues would concur in this confession, do not know any "principles" of human relations. This is not to deny that the behavioral sciences have already accumulated a substantial body of useful knowledge. The sociologist knows "principles" and the psychologist likewise, but it is a rare phenomenon indeed when one of these generalizations fits a unique situation with enough precision to afford a pat solution. The sociologists might give us a great deal of information about the effects of technological change upon the behavior of workmen, and this would be extremely useful to the student trying to think, for instance, about the case of Joe Longman. But Joe Longman is not any workman. He is a particular workman, —Joe Longman, with a personality of his own, with hopes and fears and aspirations which may be similar to those of other workmen,

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to lay down the pattern of discussion. The more I use this technique the less satisfied I am with it. The instructor must have *faith* in the ability of the class to handle the case—which means that the case must be adapted to its level of maturity." As I said previously the use of the pronoun "we" implies a uniformity which does not exist.

but which are not identical with them. Perhaps some day social science will develop the kind of generalization which is applicable to the unique (though this might seem to be a contradiction of terms) but at present it seems a bit pretentious to speak of "principles." Until that happy time is reached, so it seems to me, the teaching of human relations must remain as much art as science. And perhaps even after "principles" are achieved it must still remain so, for there is still the vexing question of the relationship of "knowledge about" to "knowledge of acquaintance."

And if by *teaching* is meant the revelation of certain "tricks" of human relations, again we must confess the sin of omission. We will grant that these "tricks" are exactly what the students expect to receive when they enroll in the course, and that our failure to reveal them accounts in no small part for the frustrations the students feel during a large part of the course. These frustrations are revealed by such comments as "We never get any answers," or "Why don't you give us the solution for this case?" Their thinking is, of course, quite comprehensible. "If you would tell us the answer to Mu Nu then I'll know how to handle a situation like Danny Keith's when I meet it." Perhaps they would if they ever encountered a situation precisely like Mu Nu. But they will not, for identity is no more known in patterns of human interaction than in nature itself. So the student must content himself, not with "principles" or answers, but simply with useful ways of thinking about things. More than this, we feel, is not an approach to reality but a retreat from it.

We do, to be sure, try to insure that he learns something about "listening" as an administrative device as well as a therapeutic one, and we try to help him learn something about the importance of "timing." We hope that he learns a good deal about "communication," and if this alone is accomplished we would consider our time well spent. But these things are general, not specific, and have to do with points of view rather than with techniques.

Thus far I have written as though all that the student gains is that which he learns from the "cases" neatly mimeographed and bound in his casebook. Nothing could be farther from the truth, for it must always be born in mind that at any given moment there are always two cases present in a class in human relations, the "case" which is being discussed and the "case" in the classroom. The student studies a problem of human interaction, but in discussing that case with his classmates he is also engaged in human interaction. He undoubtedly learns from both, but which of the two should be the principal focus of attention is a knotty problem. Most of our group here at the University of Kansas believe that the case should be the primary and the *conscious* focus of attention. This is perhaps the principal difference between our approach and that of the group dynamicists with whom we have much in common.

Yet though we might differ in the priority which we would assign the two foci of interest, there is none among us who would deny the importance of the role played by group discussion. It is from interaction with his peers in the classroom that the student must learn tolerance if he is to learn it at all. It is from them that he must learn whatever he is to learn of both the commonality and the uniqueness of human experience. He learns that the fears which lie deeply buried and the shames of which he is ashamed are shared by others too. In this there is perhaps at least a partial escape from the pain of loneliness and the loneliness of guilt. Some may say, "Is this learning that you are trying to accomplish here? Or is it therapy?" We do not know. In a vast number of instances therapy is learning. And perhaps learning is therapy too.

So I come to the end of this necessarily incomplete account of "the case method in human relations"—an account necessarily incomplete because exposition alone lacks the element of *experience*. It is difficult to write *about* a teaching method which is dedicated to *acquaintance*. In fact to do so is a contradiction in terms. I had to learn that no one could tell me "about" the case method. I had to experience it, and this experience on my own part makes me fundamentally despair of successful expository communication to anyone else.

If in these pages a tone of satisfaction has been detected, I beg the reader's pardon. We "case method addicts" are sometimes a bit belligerent as is perhaps generally the fate of those who pioneer in new undertakings—but we are not smug. Intrigued as we are by both the method and the subject, we nevertheless recognize that the last seven years have raised more problems than they have solved. We have not been able to solve, for instance, the relation of this kind of teaching to the grading system. Nor have we learned as much as we need to know about the function of the teacher and the role that he should play in the classroom. Perhaps the next seven years may bring the answers to these or other problems which I have not mentioned, but if so, undoubtedly other problems will arise to take their place. But this too is learning.

WENDELL H. BASH

CHAPTER XIII. *CASES IN PUBLIC AFFAIRS*

I

> In large part, college education must function to prepare students for experience—to provide them with concepts, ideas, and principles by which experience, as it comes to them, may be rendered intelligible and by means of which they may, within the limits of human power, master and control it.
>
> CLARENCE H. FAUST

PROBLEMS in Public Affairs is a successor to a social science survey course, organized first at Colgate University in the early 1930's. As a survey course, this one was successful at Colgate; and the acceptance of *Men, Groups and the Community*[1] by many college teachers indicates its reputation in other colleges. Nevertheless, the deficiencies of the survey form were recognized by the faculty in this area as in others in the reorganization of the curriculum following World War II, and much of the change in the orientation of the course is reflected in the change in titles. The emphasis is now on problems instead of surveys and on matters of public (or citizenship) interest rather than on points of theory in social science.

Of course it is proper for anyone teaching a General Education course to state that his course is concerned with those common problems that are part of living in modern society, and learnings even in specialized courses in a liberal arts college can help make a man a good citizen. Yet there is a particular meaning to "the art of citizenship" which can stir the most fundamental ambitions of social scientists. The generalized usages of citizenship are concerned with orders of ideas and skills which in no sense prepare a man directly for participation in the body politic. Citizenship in its narrower sense is a matter of voting, of participating effectively *within* a political party structure in order to affect policy, of making up one's mind in an informed manner about the issues which appear before legislatures and other public bodies—and then doing something. It is a matter of knowing how to evaluate the behavior of businessmen, of school board members, and of legislators. It is even a matter of reflecting on one's own behavior.

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[1] Thomas H. Robinson, *et al*, *Men, Groups and the Community*, Harper & Brothers, New York, 1940.

Having said that social scientists have a particular task in the development of responsible citizens, one must not leave the impression that this task is primarily one of training in narrow skills of a "practical" character. In addition to an area of "know-how" the social sciences are equally concerned with an area of general problems, a theory or philosophy about the conditions of public life which lead to the achievement of those values which our society considers fundamental. The standard of evaluation may be the common good, and this may be further discussed in terms of those moral standards which Americans have used—the "Premises in the Tradition of American Liberty" as the Citizenship Education Project puts it.

A course in citizenship is, then, both practical and theoretical in the best meaning of both terms, and one of the most important goals of this course may be to provide an environment in which immature students can "unlearn" and "relearn." This involves breaking down prejudices that have come from the incomplete experiences of childhood, and the development of concepts about the world of public life that can give the individual an adequate relationship to the tasks which lie before him. In a world of change all of us have had to give up some cherished notions, and the student's task seems not so very different.

Putting the emphasis in a course upon the role of the citizen is in a sense a denial of the teaching of social science, as such. Clearly, the findings of social scientists are related to the problems being discussed, but the goal of the course is to teach students how to use these findings, as citizens, rather than how to become social scientists. The distinction is consistent with one made in the area of the natural sciences, for example, where many student generations of experience have demonstrated that a course organized to teach physicists is poorly designed for the interests and capabilities of other students. The importance of the distinction lies on yet another level, however. The role of the citizen is that of action. Citizenship is an art and a part of the ongoing tide of living. Doing nothing is action, and at times it has just as serious consequences as thoughtless running in all directions. The role of the scientist is the dispassioned search for truth, and his only concern with action may be that others have a chance to hear about or read about his findings. The fact that many people profitably combine these two roles in one personality has not been sufficiently impressive to suggest such a double goal for general education courses.

It does not necessarily follow that teachers of such General Education courses are propagandists, are taking over the problems of values of their students, are telling them what to think and what to do. The instructor may be quite impartial in discussions involving value conflicts, but not at all impartial in relation to the thinking processes of the students. An appropriate relationship between what they want and what they can do may be insisted upon. What is more, the instructor is in a position to ask the students to compare their own values with the values widely enough accepted by the American people to be considered a part of the institutional structure of our society. Short of being a propagandist, he can insist that the student recognize the true nature of his own thinking, be prepared to defend it, and realize the relation between his own purposes and those of others.

One has a General Education course if his goal is to bring into focus the knowledge now held in the social sciences in order to prepare students to be more responsible citizens. Considered within the social science faculty, such a course cannot be departmental in character, even if it should by accident be such by name. Academic specialties are too narrow for the range of problems raised by participation in a complex society. In addition, such a course, if performance is up to the goals, should be the common property of every college student, regardless of his area of particular interest in the curriculum. This may be just another way of saying that the pressing needs in our society require that college faculties take the responsibility of organizing what we know and of teaching it for all students within the compass of time allowable.

One goal of the Public Affairs course, then, is to arouse interest in the students in those problems of social living which are considered to be of enduring importance, to get the students sufficiently concerned about the problems to attempt their own solutions, and to marshal such evidence from the literature of social science as is appropriate to the job.

II

> The independent acquisition of knowledge is the highest form of teaching psychologically and ethically the most fruitful.
>
> JOSEF REDLICH

The case system of teaching is used in many different social science classes today, especially in political science. Most of these experiments are descendants of a teaching method first developed by Langdell at the Harvard Law School, and cases are used in these courses because the burden of proof is put on the student and the premium is placed on his ability to use abstract ideas in relation to a concrete situation. The alternative of "regurgitation" of a textbook may be an oversimplified stereotype used too often by devotees of the case method, but the contrast is there even if it is not so sharp. As Redlich put it forty years ago,

> . . . the case method has two aims: the development of the logical, legal power of thinking, as well as the acquisition of positive knowledge. A student who learns from a textbook only appropriates the intellectual work of another instead of himself working out the principles and legal rules from the material of the cases. The memory of a student taught by textbooks is like a sieve that lets most of what was poured into it run out again; he, however, who works out the abstract thoughts for himself also keeps a firm hold upon them, and thus the case system is precisely the method which really does impart legal knowledge.[2]

Consider again, then, that a group of college teachers is concerned about a course preparing students for responsible participation in public life. Of what benefit is the course if its relation to the student is principally what he can do in the way of textual criticism on a final examination? Where does he gain the experience to relate his textbook knowledge to the situations confronting him in his daily life? The case method as originally used in the law schools was only one of the bridges used to cross the gap between the law school and the practice of the lawyer, but it was an important one. It meant that throughout his training this neophyte was required to think always of the relation between legal principle and the facts of the world, at least as those appeared in a court. This dual function of the classroom experience forced the student to his best levels of abstraction at the same time that it kept his feet on the path of practice. Some way of achieving the same results might well appeal to teachers concerned with the practice of citizenship.

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[2] Josef Redlich, *The Case Method in American Law Schools,* Bulletin 8, Carnegie Foundation for the Advancement of Teaching, New York, 1914, p. 29.

The use of cases in social science classes undoubtedly calls for some change and adaptation. While keeping the same general pedagogical purposes, the cases in public administration reflect this need.

As it has been used in the Public Affairs course, a case is a clinical report written by a qualified observer. It is a descriptive account of something that happened. To paraphrase, "A case typically is a record of a public issue which *actually* has been faced by responsible officials or citizens, together with surrounding facts, opinions, and prejudices upon which decisions had to depend."[3]

The source of law school cases is in court decisions, and the source of cases in public administration is in accounts of what public officials do, written usually by observers. A business case is written by an observer who is looking over the shoulder of some executive as he goes about his work. Similarly cases for general courses must come from the world of affairs, and this is as broad as the subjects that the instructor chooses to put into his course. If the course expects to help students understand the problems of a Senator in relation to his constituents, then we ought to watch one. If the students are to be concerned with methods of citizen control of a responsible public official, then we ought to watch a citizen group as they attempt to bring their point of view to him. In any of these, the case has an issue which has been faced by someone and it is an account of what he did, told in a matter of fact fashion without editorializing or evaluation by the case writer.

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[3] Charles I. Gragg, "Because Wisdom Can't Be Told," in Kenneth R. Andrews (ed.), *The Case Method of Teaching Human Relations and Administration*, Harvard University Press, Cambridge, 1953, p. 3.

Inasmuch as these cases are descriptive accounts, it has been the practice to write them in as realistic a manner as possible, using proper names and giving the participants personalities as far as this is of real significance in the case. Normally the case is disguised with fictitious names for people and places, though great effort is exerted to assure that the change does not alter the essential meaning of the facts in the case. Otherwise there is no effort to build up interest in the case itself by the use of flowery language or fancy titles. In addition the case writer attempts to present what happened without saying directly or indirectly what should take place from here on out. That is the student's task. Thus the most important alteration of the case from the original situation is that the writer, who may know what else took place, writes his case up to the climax and then chops it off.

The disguise is important and has a variety of values to the institution; two are perhaps of sufficient worth to be noted here. In the writing of some kinds of cases the observer simply cannot get all the facts that were originally important unless the participants are assured of anonymity. We all have a natural inclination to "temper the wind for the shorn lamb." Some of our innermost secrets, or what we know of others', may be a deciding factor in the case, and it is unrealistic when presented to the students without these. Anonymity obtains them. Secondly, the disguise of the case prevents introduction into the class discussion of all sorts of collateral information. There have been instances in which additional information known to the students about a case in which proper names were used added to the discussion; there have been others when it diverted it into channels which were unprofitable. Assuming that the observer is competent, we can expect him to put into the case what we need; then we should depend exclusively on that for the facts in that particular discussion.

Regardless of how abstract our ideas about a democratic society may get, the notion here is that somewhere, sometime, an issue arose in which it made a difference what we believed, and this instance is on a level which the students can handle. In a school board election, it may be a matter of indifference to the most conscientious voter which candidate is elected. But if a matter of principle is involved, what is it? The exploration of these issues may help students to develop their ideas of what kind of a school system a democratic society should have.

Freedom of speech is as profound an idea as we have, and yet we are accustomed to thinking of specific illustrations in which this freedom was violated or in which it was upheld. The accustomed patterns of academic thinking do not equally well prepare us for finding cases in all areas of public concern. The suggestion here, however, is that they exist and can be found, and courses can be organized which can prepare students for responsible citizenship in as rigorous a manner as they have been prepared for professional roles in our society.

The requirement that cases for general courses in social science be gotten from "the field" is certainly disadvantageous in a financial sense, but it has its merits otherwise in that it provides the case writer an opportunity to present more of the total situation. The availability of court decisions has almost precluded the development of other types of cases in law schools. Law students sometimes learn to think as lawyers should but lose the capacity to understand the relation between the law and everyday affairs, and recent innovations in broadening the courses indicate a recognition of this problem.[4] Writing cases which more inclusively state the complexities of concrete reality is simply a matter of taking advantage of what others have learned.

III

> To learn to step outside the conceptual schemes one habitually uses in search of new and more fruitful ones is no mean accomplishment.
>
> GEORGE F. F. LOMBARD

In between the law schools and the liberal arts colleges lies another development in the use of cases in the teaching in the Harvard Business School. Some of the history of the relations between the

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[4] Edward H. Levi, "What Can the Law Schools Do?" *University of Chicago Law Review,* vol. 18, pp. 746-755.

Colgate faculty and the Harvard Business School has been told in an earlier article.[5] Since that time many experiments in the use of cases in social science classes have been conducted. From among these, four books are in print which reflect kinds of cases and methods of procedure in the classroom which are quite similar to those in practice in the Public Affairs course at Colgate University. Two books are for human relations courses in undergraduate liberal arts colleges, and two are in the field of human relations in administration. The last two are thus for more specialized purposes than the Public Affairs course, but the first two have many of the same objectives.[6]

In these more recent developments cases have been used in subject matter areas which are closer to the subjective experience of the individual, in the sense that personal, attitudinal factors involving overtones of emotion and feeling are more predominant. In a private liberal arts college today a typical student's "feelings" are not so important in the discussion of Newton's first law as they are in the discussion of labor relations. No false dichotomy is intended here, suggesting that one's conceptions of the physical world involve no subjective factors. Possibly the foundation for the customary distinction between the physical world and the social world lies in the greater age and respectability of physical science. Students have been conditioned throughout their lives to expect that science courses will open up new vistas for them and will change their ways of thinking. On the contrary, in social science courses they expect that they may learn new facts, but they are not prepared for new organizing principles. Students in courses in anthropology and sociology are talking today in terms that were rejected by scholars two generations ago, and they change their opinions only in the face of the same voluminous evidence.

Whatever one's analysis of cause and effect here, there can be substantial agreement that social science courses involving fundamental problems of citizenship necessarily must concern themselves with the conceptions of the social world brought to the college by the students, and that these conceptions involve large elements of subjectivity.

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[5] Sidney J. French and Wendell H. Bash, "General Education in Social Science at Colgate University," in Earl J. McGrath (ed.), *Social Science in General Education*, William C. Brown Company, Dubuque, Iowa, 1948, pp. 182-192.

[6] F. K. Berrien, *Comments and Cases on Human Relations*, Harper & Brothers, New York, 1951; Hugh Cabot and Joseph A. Kahl, *Human Relations, Concepts and Cases in Concrete Social Science*, Harvard University Press, Cambridge, 1953; Robert Dubin, *Human Relations in Administration*, Prentice-Hall, Inc., New York, 1951; John D. Glover and Ralph M. Hower, *The Administrator*, Richard D. Irwin, Inc., Chicago, 1950.

We sometimes speak of ourselves as being a society of conformists with standardized modes of behavior. Nevertheless, the personal interpretations of behavior vary widely. Even in a small class the most diverse notions about the same phenomena appear. In "A Group Discussion of the Dashman Company Case"[7] John D. Glover reproduced a sum total of one hour of the tape recording of one class session. Some students characterized a man's behavior as being authoritarian, others as being "nondirective." Some said he was sincere, others insincere. In another class observed by the writer students interpreted a statement about a man's "reserved Vermont background" as meaning that he was born reserved, that genetically Vermonters were somehow different. This touched off a considerable discussion about this man's temperament and where he got it. All these interpretations about what people said and what they did were initially implicit in the minds of the student readers.

The task of preparing responsible citizens is in part the task of getting students to recognize the assumptions about the nature of a democratic society that they bring to the analysis of any particular situation. When we take action, it is on the basis of a general set of ideas about what we as individuals want, what we think is beneficial for others, and what we think is effective in the given conditions. It is in the nature of social conditioning that these ideas and skills are pushed into the background of our thinking and become as accepted as the air we breathe, as good etiquette becomes a natural part of the behavior of the individual and does not need to be reconsidered from A to Z in every interaction. Yet a good educational program assumes that an individual's action is more effective to the extent that he has thought through all the implications of his action. And it also assumes that many of the implicit notions of eighteen-year-old boys may not be sound enough. Until a student knows that he is operating on an assumption, he is not ready to examine it.

The examination of one's own scheme of thinking about the world is, of course, only the first step in a course. Beyond this there are certainly at least two further steps. One may be subsumed under the heading of communication skills and the other under the heading, for want of a better term, of social science.

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[7] Andrews, *op. cit.*, pp. 138-163.

One theory of a democratic society assumes as a precondition for its existence that there be no blockages in communication. The freest possible discussion of all the issues must be available in all segments of the society with opportunity to recognize the opinions and purposes of others, especially those that are conflicting with one's own. These varying interpretations of the same phenomena are, however, blockages to good communication in so far as they remain implicit. A free classroom discussion helps to generate a sensitivity to communication skills, putting one's own thoughts in words that will express the most for the other party and trying to understand the essential meaning of what the other is saying. Semanticists like Lee and Hayakawa have recognized that only with good communication skills can we expect that the results of any discussion will be consistent with democratic values. The classroom can be the students' first laboratory here.

After one has learned to recognize his own assumptions and has developed the capacity to explain them to others and to appreciate theirs, the problem is still present as to whether the assumptions are any good. There are many people in and out of academic life who believe that social science has no content, or that some precious little can better be taught in other departments. While disagreeing with this notion, one can avoid the requirement of going into detail here. In a citizenship course taught by social scientists there may be a definite theoretical scheme, and this undoubtedly is at variance on many points with the immature ideas of students. How to get a student to drop one set of ideas with which he has felt comfortable in order to take on another one, which will be sufficiently incorporated as to become a part of his daily behavior, is then the problem.

IV

> In the process of learning, the learner's dynamic cooperation is required. Such cooperation from students does not arise automatically however. It has to be provided for and continually encouraged.
>
> CHARLES I. GRAGG

The heart of a case course, as of any other kind of General Education course, is a set of organizing ideas, a frame of reference, which can provide an ordered way of thinking about the complex reality. The confusing variety of courses given by different faculties that have tackled this same job can give one a sense of the complexities involved. Given three, or six, or any other specified number of semester hours to work with, there are literally innumerable facts and ideas for which compelling arguments can be made. In the Public Affairs course attention has been devoted mainly to four major areas of American public life: status systems both of class and race, educational systems, political systems, and economic systems; and the interrelations of these. A second major area of concern has been those moral ideas by means of which we can judge these institutions; thus, "What is a democratic society?" A third and minor area of concern has been the decision making process, considered not in terms of formal logic or even psychology, but incorporated into the course in the making of judgments about the issues in the cases.

Teachers in General Education courses have used discussion techniques extensively, for reasons which appear to this one person as being valid. Only a few need be introduced here.

The discussion process is at the heart of the democratic process, and we need all the experience we can get at it. The claim was once made that a case course in one insitution fell on its face because the students were too diverse in their origins to be able to communicate effectively with each other, and the conclusion was drawn that the alternative here was a lecture. Yet the assumption was not recognized that the instructor somehow had the skill to communicate effectively; somehow what he said would have a single meaning when that was not the case with what the students said. Possibly responsible citizenship was not so central a goal in such a course; had it been, one might suppose that the instructor could hardly feel successful unless his students left the class with the first requisite of democratic participation, the ability to discuss matters of public policy with other members of their society and to reach at the minimum a *modus vivendi.*

An assumption is undoubtedly made here that contentious issues are brought before the class, on which intelligent citizens can easily divide into two camps, that respectable positions can be taken on either side, and that these issues are so selected as to lead to the kind of judgments which can be useful later in the lives of the students. If the course is concerned with the development of abilities which a responsible citizen needs, the classroom should go as far as it is physically possible in the given conditions to get the students to make their own formulations. One need not say that a lecture is useless, though he can say that many times matters are lectured about which the student could just as well read in a book. There is the occasional class which generates no discussion because there is literally nothing to discuss; the facts and the conclusions to be drawn from them have already been presented. Certainly there is a place for a lecture to present facts unobtainable easily, to present particular points of view by persons holding them, or for interpretation when a class reaches the limits of its own resources. However, college teachers have a human failing; we believe that what we say from the podium can magically clear the air of all confusion. Sometimes it does; but at other times we go too far and too fast, and it might have been better for us to restate the problem and ask the class to have another go at it.

Such an approach enters into the techniques of group discussion in which the role of the teacher, as the discussion leader, is not universally popular. To the teacher, perhaps being a "retiring light" seems too much like not earning his salary. Even those who develop enough interest to ask for help receive only a few concrete suggestions. Often expositions on group discussion techniques in college courses abound in hedges or such words as: "so much depends on the particular aptitudes or skills of the individual instructor." True enough.

Very likely this resistance on the part of the instructor usually stems from his habits of teaching. He is used to the recitation process in which the student says in his own words what the author said in different ones. Then the instructor dutifully formulates the questions to throw out at the student. However, should the instructor once recognize the importance of the student formulating the questions, he is well on the way to stimulating the student into fresher thinking about what the author has written.

From the observations of students and teachers alike, it is agreed that in discussion classes the student learns to take the initiative as he feels the course is directly related to his needs, and as he enjoys discussing intellectual matters with his peers. Without doubt, in the hands of a skillfull instructor, the end product of discussion techniques is valuable.

V

> Argument, however rational, that is unrelated to a developing point of contact with the external world remains—however logical —a confusion of indeterminate possibilities.
>
> ELTON MAYO

The student-centered, group discussion type of class in which the instructor plays a permissive[8] role is broader than the case system per se. The distinction lies in the *piece de resistance,* the thing that the class is mainly concerned with. It can be argued that not only do the students need to develop their own intellectual tools, but also that it makes a difference how this is done.

One rationale for making cases the focal point of the class discussion is that this relegates ideas and concepts to the role of aids or tools. Whatever we can say about the world of public affairs is but a shadow of the substance itself. In spite of our written constitution and so many books about American government, no one has captured in words all the wonderful reality of the living thing. Constant concentration on textbooks written from other textbooks may bring the impression that the concepts used are things in themselves. They *are* things in themselves to the extent that there is a moral compunction in the people to live up to stated ideals. But the distinction here is not minor. Many college graduates become extremely annoyed (along with some social science faculty members) when the world outside the ivory tower refuses to conform to some particularistic formulation. The tendency to throw away college textbooks after graduation may have some justification.

Cases have been used, then, to keep the discussion on as "real" a level as possible, to recover for social science classes some of the benefits that good laboratory instruction has for the natural sciences. This means that students are trained to "run up and down the ladder of abstraction,"[9] but it also means more. It means that they are given a kind of training in observation in addition to analysis. The combination thus recovers some of the goals that seemed important to L. J. Henderson as stated in his introductory lecture to Concrete Sociology in Harvard College.

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[8] Robert Dubin, *Instructor's Manual for Human Relations in Administration,* Prentice-Hall, Inc., New York, 1951; Also John D. Glover and Ralph M. Hower, "Some Comments on Teaching by the Case Method," in Andrews, *op. cit.,* pp. 13-24.

> In the complex business of living as in medicine *both* theory and practice are necessary conditions of understanding, and the method of Hippocrates is the only method that has ever succeeded widely and generally. The first element of that method is hard, persistent, intelligent, responsible, unremitting labor in the sick room, not in the library; the complete adaptation of the doctor to his task, an adaptation that is far from being merely intellectual. The second element of that method is accurate observation of things and events, selection, guided by judgment born of familiarity and experience, of the salient and recurrent phenomena, and their classification and methodical exploitation. The third element of that method is the judicious construction of a theory—not a philosophical theory, nor a grand effort of the imagination, nor a quasi-religious dogma, but a modest pedestrian affair or perhaps I had better say, a useful walking-stick to help on the way—and the use thereof. All this may be summed up in a word: the physician must have first, intimate, habitual, intuitive familiarity with things; secondly, systematic knowledge of things; and thirdly, an effective way of thinking about things.[10]

The case is then used to provide the developing point of contact with the external world that Mayo was concerned with. It is a way of keeping the discussion on the level of experience, and of developing experience. While "It is too much to expect that anything except experience can be exactly like experience,"[11] it is not too much to expect that we will do everything we can within the limitations of the college environment to approximate it. An observer has a more direct relationship to the phenomena than someone who reads about it, but he does not necessarily have responsibility. Much can be done in the classroom to provide opportunity for decisions that are like those to be made later, but without the risk of failure on the part of those who are still in training. When the class assumes the task as being a real one, important to them, the criticism of one student by another can be an effective stimulant. Here may be the reason for another compulsion for teachers using cases—they want their case materials, especially early in the course, to be as near to the lives of the students as possible. This enables the student more easily to see himself as part of the case and encourages a kind of role playing on his part. The discussion then helps bring reflection to bear on his own past experiences, and if the classroom discussion is a vital participation for him, the case materials can move gradually from areas close to the student's present life to areas more remote, thus expanding his experience at the same time that new ideas and concepts are introduced.

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[9] Andrews, *op. cit.,* p. 161.

[10] Reproduced in Cabot and Kahl, *op. cit.,* p. 28.

[11] C. I. Gragg in Andrews, *op. cit.,* p. 11.

The relation between formal education and *critical thinking* has been more obvious than the relation between education and *critical living*. The contribution that a college education can make to life, apart from any relation to income, has not really been forgotten, especially in liberal arts colleges; yet when it comes to translating the idea into courses and teaching techniques, many a college can claim only a modest success. How often do we hope for the one, yet admit only the other, "My course will teach you to think," leaving implicit the argument that good thinking is good living.

In summary, one may be permitted to quote from a memorandum of one member of the staff of the Public Affairs course.

> While traditional teaching methods, especially of the textbook variety, tend to separate ideas from action and fact from constitutive principles (values, ideas, institutions), the case method, rejecting this separation, seeks to bring together, as incorporated in actual situations, the facts and the principles constituting human action, on the premise that human action takes place in and through a real world of fact and principle, and is so to be understood.
>
> The case method and this theory of human action are not separate. Given the above conception, the case method as a teaching technique follows logically. Responsible citizenship is not something automatic, intuitive, or achieved through a knowledge of abstract principles, but involves an act of thought which is itself rooted and implicated in a world of fact and principle.
>
> The case method, furthermore, rejects the traditional academic separation of the disciplines. It demands that one follow the problem wherever it may lead.

Democracy requires a thinking citizenry. The role of the citizen is by definition a general one, and requires the forming and activation of judgments cutting across academic divisions of labor. Thus the case method requires that the student make judgments. It seeks to lead him to an objective ground for his judgments. The course in Public Affairs and the cases involved calls for judgments that have a public rather than a subjective or private referent or ground. This requires that the student carry out the implications of the ground on which he elects to make a judgment. An examination of the ground, then, leads to an understanding of the principles on which he would act in a particular case.[12]

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[12] Arnold A. Sio.

ROBERT A. WARNER

CHAPTER XIV. *PROBLEMS IN MODERN SOCIETY*

THE University of Louisville is a municipal institution enrolling mostly middle class students most of whom live at home or off campus. Many students are employed, especially the men, and a dominant educational motive is vocational and social advancement. There are, however, standards and traditions of science, scholarship, and professional training which bring students from the state at large and from outside the state.

The General Education program was begun around 1930[1] and has developed in the social sciences the following pattern:[2] a freshman integrated course (6 hr) Problems of Modern Society, a sophomore course (6 hr) History of Civilization, a senior course and a senior essay required for social science majors, and distribution requirements. The history survey is introductory for history majors and required for other majors in the division, but the freshman course which is the subject of this chapter is generally not taken by Social Science Division majors. Counseling directs out-division students into it, although a few students proved exceptionally well informed in social sciences by the entrance examinations are excused. In the other divisions there are a freshman English course, a natural science course, and a sophomore humanities course, taken largely by out-division students.

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[1] J. J. Oppenheimer, "Developing a Program of General Education at the University of Louisville," in W. Hugh Strickler (ed.), *Organization and Administration of General Education,* William C. Brown Company, Dubuque, Iowa, 1951, pp. 86-102.

[2] Earl J. McGrath (ed.), *Social Science in General Education,* William C. Brown Company, Dubuque, Iowa, 1948, pp. 29-36.

In 1942, when the writer assumed responsibility for the freshman course it had been reorganized and replanned by Dr. Francis O. Wilcox within the Cooperative Study in General Education.[3] At intercollege conferences and a prolonged workshop he had clarified the course objectives, and reorganized the content into thirty-five or forty problem-oriented topics, or cases with suitable outlines. They were readable and ingenious topics, elaborated with questions. The course had developed from a survey of the social sciences shared by departmental men of a decade earlier to a mature, integrated problems course with a local community orientation and elaborate outlines, bibliography, and test materials.

The effort of the writer has been to improve the effectiveness of the course through changes in teaching methods. The following excerpts from an intrainstitutional report prepared by the writer in 1944 will give briefly the early story and the 1944 outline.

> The changes introduced into the course have all been intended to improve the influence and effectiveness of the educational experience upon the students. In the first place, the course has undergone a revision to simplify and to integrate the material. Although the content was little changed except in ways to be mentioned later, the number of separate subjects in each semester was reduced from 18 topics to 5 units composed of interrelated topics. Each unit is about three weeks in length, is introduced by an outline and is completed by a test. Three weeks is long enough for a considerable body of material to be studied and short enough for simplicity in plan and operation. Three-week units fill the semester conveniently and provide enough tests.
>
> The following is the outline of units and topics included:
>
> SOCIAL SCIENCE 101
>
> UNIT 1 Education and the family
>
> Objectives and methods proper to this course, function of liberal arts education
>
> The problems of youth, of choosing a mate, building a family life, divorce (personal, religious, public), women working, etc.

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[3] Cooperation in General Education, A final report of the executive committee of the Cooperative Study in General Education, American Council on Education, Washington, D. C., 1947.

The problems of juvenile delinquency and crime, alcoholism, insanity, broken homes

The problems of child welfare, mother's aid, nurseries for working mothers, domestic relations, case work

UNIT 2 Family incomes and family needs

The problems of poverty—the distribution of the national income; unemployment

Consumer problems: advertising, grade and quality, standards, budgeting, diet, rationing

The postwar readjustment problems, and planning

UNIT 3 The social service state, municipal and federal

Health problems: the distribution of medical and hospital facilities, public health, socialized medicine, industrial disease and accidents; social security

Municipal, state, and national social services; and private social services

Zoning, planning, civic improvement, housing

Civic organizations, the newspapers

The suburban movement, traffic problem

In general, the problems of the city

UNIT 4 Labor and management

Job getting, job mobility, and job security

Personnel management and labor relations

Labor organization: A.F.L., C.I.O., the history, labor legislation: the problem of labor racketeering

UNIT 5 Farm and rural problems with special attention to the South

Conservation, rural rehabilitation, reforestation, T.V.A., soil and water planning

Migration, debt, health, education, race relations, political aspects

SOCIAL SCIENCE 102

UNIT 1 Introductory: America in a world at war

Geopolitics—population problem, distribution of world resources

World trade, world finance, international debt

Imperialism, war aims, introduction of the problem of a world political order

UNIT 2 Problems of race and nationalism

The facts and the theories about race

The problem of the Negro in the United States

The immigrant, the Jew, and the Oriental in the United States

A world policy on race minorities in Europe

UNIT 3 Conflicting world ideologies and the facts behind them
  Fascism, communism, socialism, democracy, in theory and practice
  The governmental institutions of
    Germany and Italy
    Japan
    Russia
    Great Britain and the United States
    China

UNIT 4 Can democracy be made to work?
  Party machines and bosses
  Public opinion and propaganda
  Democracy in times of crisis—the trends toward dictatorship

UNIT 5 Planning for a new world order
  International organization
  Planning in a democracy
  The social service state
  Religion in the new world order
  Education in the new world order

The main changes have been in method and designed to induce the individual student to identify himself with the problems and the subject matter of the course. Observation and criticisms which had been collected and summarized by Dr. Wilcox indicated that the nuclear weaknesses were the apathy and confusion of the students. With many topics to cover, much reading to be done, and much of the plan and rationale of the course high above their heads, the students clung to the one understandable reality of the mark and the tests as the key to success. Many students studied the reading, textbook fashion, in order to "hit the tests." Since the tests were long, objective in type and machine scored although not strictly "factual," echoing the reading, and further, since they were not taken up in class, they seemed mysterious and incomprehensible to not a few, and inspired a fatalism that effort was unrelated to outcome. The challenges and problems presented on the outlines, therefore, were often neglected unless made valid by the lecture skill or personality of the instructor. The course was test centered, remained "textbooky," and the skillful plan, materials, and outlines were of limited effectiveness.

The solution of this problem had to be to increase student activity and thus student identification with the vital elements of the course. Discussions, projects, and student thought and planning had to be increased relative to lectures, tests, and even reading. The tests, in so far as possible, had to be better understood and better integrated with the course and supplemented by other bases for the grade. Student self-evaluation of success in the course was needed.

To effect these new objectives the following changes in program and method were introduced by gradual and experimental steps. First, stress upon student "opinion" of the problems presented was developed. In order to encourage interest, in order to locate the student, in order to make the material presented in the course functional, it was felt that the student's real opinion on the modern social problems was the crux.

The means taken were first the utilization of the inventories of opinion produced by the Cooperative Study in General Education. The Inventory of Social Understanding was given at the beginning and end of each semester and this afforded a survey of the state of opinion among the students and the basis for a comparison with results in a retest after the course. For the students, the inventory offered a stimulating, challenging introduction to the problem material with which they would be dealing, and a survey of their own opinions which might be the beginning of objectification. As a matter of policy no pressure for the acceptance of the key responses was exerted, and it was stressed that the test and the key were prepared by informed social scientists who were "liberal." The answers the authors preferred represented, as well as their knowledge, just their opinion. The instructor attempted to demonstrate as much objectivity about the students' opinions as he wished them to develop. When the Inventory of Beliefs about Post War Reconstruction was developed, it was substituted as more timely.

The inventories have been useful as a teaching device. By them, the student's interest in his own opinion has been aroused. Although no pressure was put on it, some students became anxious to learn where they stood. It was announced that results would be interpreted in a personal conference, if desired. Some requested such a conference and when they came, voluntarily, the proper counseling situation, as defined by Carl R. Rogers,[4] was set up. An influence upon behavior, opinion, and learning was afforded. But, of course, proper counseling methods had to be used, for the principles of education in this field and counseling are similar if not identical. Even more valuable was the student interest, when it appeared, in the results of the *retake*. Sometimes their cooperation was thus enlisted in the coordination and liberalization of their opinion. Furthermore, and more important, all along the line, the self-knowledge of the student was advanced.

The second means adopted to center the course on the individual student, at his level, was the establishment of small student discussion groups. Some days after opening, a class was subdivided into groups of eight or ten each, and these groups met under their own chairmen through the class hour for discussion of suggested topics and questions. Usually they reported their conclusions through a spokesman at the next full meeting. If all groups discussed the same subjects, the representatives might serve as a panel to present and defend their conclusions against the views of the other committees. The instructor served as moderator and directed attention to omissions, inconsistencies, and larger consensuses. He introduced related material or could give reins to lively discussion by these leaders. By this procedure maximum exercise and motivation in oral expression, in clear thinking, and in self-control during discussion was attempted.

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[4] *Counseling and Psychotherapy*, Houghton-Mifflin, Boston, 1942.

The committee discussions, since they took place five or six at once, and could not be supervised by the instructor, had to be on subjects and questions that would themselves induce the interest and divergent opinions of the students. By experience some questions thought good were found to be too "academic," badly phrased, or of too high-level abstraction; others succeeded or were developed, and the instructor was thereby aided in locating the student and thus improving the approach and content of the course.

As a result, the course began to outrun the classroom and spread to discussions in the lunchroom, the campus, the home, and the fraternities and sororities. Since there could be no better evidence of application of learning and activity in learning, this was encouraged. Campus situations were used as examples, class activities were developed into extracurricular activities, local and community examples were stressed. Students were encouraged to cite and relate their knowledge and experience which had been gained outside the course, at work, in the community, and at home.

Another means used to effect application was to use speakers drawn from the community. For example, a labor leader, a sharecropper, a politician, a member of the public housing board, a social worker, a pioneer and leader in the field of juvenile court and juvenile delinquency work were obtained to talk to the classes. The students were somewhat better prepared by the course plan and the discussions to make good use of these. One speaker remarked that the questions asked were the best he had encountered in groups he had addressed.

One of the units, on the social services which the community offers, gave opportunity for individual field work. Each student investigated and reported on a social agency. Judging from the reports submitted, this was a successful plan. Some students, by themselves, had impressive or enlightening new experiences, and a few perhaps were deeply influenced.

The most direct application for which the course gives opportunity is in the subject of education. Here a discussion of the plan, objectives, and philosophy of the course itself serves as the example and problem. Usually this discussion is used as the introduction to the course. In one experimental semester, it was used to end the course, to evaluate the methods, and to plan for the next semester. Since, in his case, the interest and morale was high, the suggestion was broached that the course be made into a student "advisory legislature." The problems would be discussed, policy decided, and resolutions passed as the product of the study done. Genuine political and leadership experience would be obtained as well as clarified opinion of the problems studied. A few of the students caught the idea and although they could not convince the others, and although there was little practical possibility due to limitations of curriculum and time, and quality of the discussion of objectives and methods was enhanced by this approach. Also many understandings of the difficulties of democratic determination of policy were obtained.

The use of this scheme as the introduction to the course is effective in understanding the rationale and basis of the course. The supplementary purpose is served with these beginning freshmen of orientation to instruction and the role and nature of a liberal arts college. The students are impressed by the difference between education at the college level and at the high school level. By direct experience they learn they are on their own, are expected to be mature, and to accept responsibilities as well as rights. They learn why they are in college. The extension at every opportunity, whenever there is a promise of success, of the responsibility and activity of the students is a basic principle in the course.

As additional examples, student responsibility was in one instance induced for handling a cheating situation and for the development of control of cheating by moral means. Volunteer students took charge of the presentation of the illustrative movie programs. Representatives from the various sections conferred with the instructors on course matters. A system was devised for student rating of their work in the committees.

Another means of obtaining student identification with the course and application of matter learned has been the supplementary reading. With the cooperation of the library, an open shelf of the more attractive and interesting books and pamphlets related to the unit are assembled and held on reserve. The students are required to browse among them and to select a topic for report. In this way, interest may be caught or developed, the literature may be surveyed, and the habit may be begun of looking over, skimming the contents, and selecting and using books and pamphlets. Likewise, current periodical articles are mentioned and mimeographed

> reading lists are provided to stimulate such reading. Clipped articles are passed around in class and frequently lectures or discussions are begun by reference to the morning paper or a recent article or editorial. Every effort short of disturbing the orderliness of the course is made to synchronize course discussion subjects with current controversial issues and to relate the two.
>
> Much more could be done by coordinating library and course work through the development of a social science laboratory. A special room could be stocked with pamphlets, magazines, clippings, and related books in social science, in which seminars might be held and research and reading done. Bulletin boards, displays, models, décor could be used to stimulate interest. The local community should be the focus in order to inspire application.

From this excerpt of an intrainstitutional progress report, it will be seen that the approach to new methods in the Problems of Modern Society at the University of Louisville has not been abstract and theoretical, but pragmatic. Although experimental in methods of motivation and group dynamics, it has remained conservative in the content and coverage of good material about the problems of modern society for General Education in the social sciences.[5] Since the course is terminal for many of the students, the objectives have been conceived broadly, as the whole range of training in socialization, for human relations, for citizenship, for family relations, and in leadership both personal and intellectual. But since the course is in effect compulsory, and the students are counter-selected as regards their previous absorption of such information and interests, much attention is directed to motivation and attitudes.

Within the general framework outlined, the course has been and is continued and revised annually in outlines and reading materials and handled by the instructors in the spirit of the method as the situation in each section gives opportunity. No set and arbitrary routine in method is followed and the content is controlled only by the required minimal reading arranged in progressive units. Free discussion of controversial issues accepted by the students and at their level, among themselves, sometimes in an unsupervised committee situation, is the salient feature, and the outlines have been developed to induce and to guide this activity by analyses, questions, and the presentation of projects. Let us consider this method and orientation and the pedagogical assumptions upon which it is based.

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[5] The course objectives are the same substantially as those of the President's Commission. See *Report of the President's Commission on Higher Education* Vol. I p. 50.

Behavior, and attitudes leading to desirable behavior, are the goals in this General Education course as much as if not more than specific knowledge and skills. Minimal requirements for citizenship and human and family relations should be conceived in terms of both attitudes and emotions. Our society is rich in opportunities for social learning and understanding if attitudes are positive and receptive, and for social action if perception, analysis, and acceptance are efficiently motivated. In controversial and problem areas educators have long recognized that the obstacle to learning is less ignorance than emotional bias and error, and frequently the bias is *apathy*.[6] The press, radio, libraries, and the variety of social experiences available in our society provide the individual with almost limitless opportunities, but his inner conflicts and resistance establish limits narrower than his capabilities and potentialities. The result has been proportionate failure to achieve the free, fair, democratic society of our ideals, and in citizenship to encourage the abdication of self-government. I do not mean to blame the ills of our society on education. The counterdemocratic developments in the various aspects of modern life are obvious, but these are influences upon the student, and the educator has the responsibility of supplementing the influences of society in the way most constructive toward the accepted long-term values of the culture. However discouraging the prospect because of the trends toward the centralization and controls of the elaborate, specialized, managerial society, his duty is to teach best for the moral and spiritual values of individual freedom, and broadly distributed democratic responsibility.

There has been considerable confusion about the role of the social sciences in a free democratic society. The social sciences belong to the whole society, to all men and women, in so far as these skills and knowledge may be adapted and utilized by laymen. Only thus may we retain the values of individualism and a broadly participant, free, and self-adjusting rational society. The efforts of specialists, even humanistic and social science specialists, to attain objectivity and accuracy in observation and analysis has often resulted in an isolation of research and knowledge from application and life—at least through excessive emphasis upon expertism. Social scientific "objectivity" for laymen is not mute and apathetic reliance upon expert authority but an adequate understanding of the proper complex relationship between laymen and experts and their respective individual prosecution of reasonable social roles. On the other hand, objectivity for the social "expert" is coming to be recognized as not the evasion of decision and action (in which moral values and issues are always implicit), but to be essentially relative, an act achieved by the judgment and character of the scientist, in which the value of integrity and the truth is combined with and balanced by due and proper self-knowledge and self-awareness. By the academician wise judgments are possible when allowance is made for personal and perceptual limitations and prejudices and for the limited role and value of academic knowledge however scientific.

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[6] For a perceptive and profound analysis of political apathy see David Riesman and Nathan Glazer, "Criteria for Political Apathy," in A. W. Gouldner (ed.), *Studies in Leadership*, Harper & Brothers, New York, 1950.

How may this judgment and wisdom be attained? Partly it is the result of broadly distributed knowledge of society, of history and of social psychology—General Education. But George Lombard[7] points out that the art and quality of awareness and of self-awareness are peculiarly the products of training organized under the burden of personal responsibility in handling actual situations. At its upper, specialist level today in social science, research field studies and action research display such awareness and humility. Some elements of field study may be available for the nonspecialized training of laymen, and methods and tools found in social psychology are self-directive counseling and group techniques—discussion, role playing, and more elaborate group dynamic procedures. The case method as a pedagogical strategy is oriented to develop judgment and may be the best for a particular educational job.

But we are now on the subject of pedagogical method and I wish to turn more directly to the thinking behind the course at Louisville. I believe all would concede that the educator should base his pedagogy on, or make it compatible with, the relevant advancing social, psychological, and cultural sciences—the laws, the principles, and the best current hypotheses. The developments in individual and social psychology have greatly added to our knowledge and appreciation of motivation in learning and mental growth. We can now manipulate more consciously (if not yet "scientifically") the dynamics as well as the content and mechanics of learning. General Education provided by an integrated social science course in itself represents a recognition in curricular planning that related wholes are more dynamic for laymen than content presented by separate disciplines. Topics or cases related to the students' experience are more "interesting" according to associational psychology; and the dilemma or problem has long been recognized as stimulating. But the many studies of repression, conflict, and therapy through emotional reeducation and release on the Freudian-Adlerian background, the analysis of ego strength, and involvement of Muzafer Sherif, the studies of leadership and interpersonal relationship,[8] of group dynamics and sociometrics,[9] of group and class and applied anthropology[10] have important implications for pedagogy. These require a new emphasis upon self-learning and therapeutic release, upon attitudinal and emotional factors, and upon awareness of and manipulation of group situations and group morale. It appears that education which professes objectives of behavior, living the good life, of sound thinking and judgment, of constructive attitudes and personality development must now be critically aware of new methods.[11]

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[7] "Self-Awareness and Scientific Method," mimeographed paper, 1950.

At the University of Louisville our pedagogical strategy in the Problems of Modern Society course has been directed at attitudes in social science. We wish the student to become personally aware, involved, rational, and active in regard to the most important issues and problems faced by his and our generation in the world today and we wish him to attain therewith the relevant information and skills and the art of sound judgment. We believe that this represents for these nonspecialists, laymen essentially, the proper training in social science as today conceived and developed.

[8] Frederick M. Thrasher, Harvey W. Zorbaugh, Clifford Shaw, William Foote Whyte.

[9] Jacob L. Moreno, Kurt Lewin.

[10] Elton Mayo, Conrad W. Arensberg, F. J. Roethlisberger, W. L. Warner, E. Wight Bakke.

[11] See, of course, Nathaniel F. Cantor, *Dynamics of Learning,* Foster and Stewart Publishing Corp., Buffalo, New York, 1946; and Carl R. Rogers, *op. cit.*

The elementary training afforded in the freshman course at Louisville is broad in subject matter and attempts to provide these learning dynamics by the methods employed. Since the real opinion of each student constitutes his identification with the issues and dilemmas of our day, the activity most practical and real in the academic situation is his responsible discussion of these opinions in a group of his peers. In a committee or class discussion, with least opportunity to evade and to depend upon others, he must formulate, validate, and modify his opinions, and cooperate with others through tolerance of divergent opinion and active search for consensus. It is felt that in some measure the course succeeds and that the growth in learning, skills, and attitudes is that which is most likely to continue throughout adult life and to be significant and effective for the General Education goals.

At the present time the course is still a survey of all the most important problems for intelligent living in our culture and society.[12] For convenience it is still organized into three- or four-week units of roughly the same character as those described in 1944, but modified, rearranged, and brought up to date in focus, selection, and reading. But it has become more of a related, unified whole than that outline implied, more of a unified experience for the student than the study of a collection, even an arranged set of problems. We believe that the growth in understanding by the student best takes place in a relatively free relationship between the student and the course, between student and teacher, and between student and student. They should decide what problems are "most important," and the organization of the course should emerge with their acceptance of the professor's preplanning. The instructor thus is allowed freedom and considerable flexibility in his efforts to get over the course as a whole to his particular group of students. His efforts to hold to the organization provide instruction in the analytical systematization of contemporary social sciences and their fields of focus, and in the fundamental, interrelated, seamless web of unity in actual life.

The first unit in the first semester is focused on the individual and his problem of acceptance of himself and his social role—the problems of mental hygiene and social relations. The topics are the student's "liberal" education, especially in the social sciences, and mental illness, juvenile delinquency, and crime; which afford both positive and negative approaches to the subject of morale and mental-social hygiene. The second unit is on the family—on making a successful marriage and family life. The third is on the economic problem of the individual and the family—making both ends meet under the conditions of modern employment, market, and prices. The fourth unit is on the social and community support, insurance, and aid in all the above and the planning, prevention, and ameliorative functions and services offered or potential.

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[12] Except the problem of religious faith. We hope that the emphasis upon values and character development mitigate this deficiency necessary in a public institution.

The second semester as the current outline expresses it, "deals with the largest problems of human relations—with war and peace, freedom, self-government. The emphasis is on the dynamics—power, maneuver, propaganda, politics, war, and strategy. We study American foreign policy, the ways and policies of other nations in the world, the conflicting ideologies, the nature of socialism, the validity of 'democracy,' and the possibilities of world organization and peace." The present units are:

1. What is our foreign policy?
2. Politics—the clash of ideologies
3. Government, business, and labor
4. The crisis of freedom ("human rights," civil liberties, and race relations).

The mimeographed guide which the student uses is not an outline of content but an orientation to the whole course, an organized list of required, suggested, and related reading, and instructions for projects to be performed; and finally and principally, a collection of questions thought to be useful and effective in inducing self-motivated discussion. The questions are available to instructors, or to the students themselves when they are in their own committees, to start and to provide some organization and direction to the essentially free discussion. But they are suggestive rather than prescribed. The responsibility is upon the instructor, the class, and the individual student to study and discuss the great problems and issues, as they prefer and decide.

As a teaching strategy in a conventional college situation, it must be admitted that the experience with the course has revealed many practical weaknesses and difficulties. Some of these arise from the broad scope of subject matter and the organizational looseness of method. The approach is individualized, and the aim of teaching "the whole student the problems of modern society as a whole" is so ambitious that some students become and remain lost. Naturally, students do not achieve in relation to their own predilections and philosophy a consistent, unified reorientation of themselves to their society and its values from their experience in a six-hour course despite revised outlines and the best efforts of associates and instructors. They may not gain even a nucleus, of which they are aware, of such reorientation. The instructor may find the individual needs and the subject complexities so great that he fails with many students. Indeed he may, in the effort to succeed with all, undertake so many approaches that he himself increases the confusion with "multifocalism" of presentation.

At Louisville another handicap to the free discussion approach is the cultural uniformity of our students—the lack of an original diversity of opinion with which to work. This is, of course, accompanied by apathy toward unfamiliar problems. In personal, family, and political matters an adequate range may be unearthed by sufficiently skillful pointing up of basic issues, but in economic, administrative, intercultural, and international problems the situation has often proved defeating. An instructor attempting to supplement student deficient experience vicariously may find himself arrayed against the students, a situation which, of course, is prevalent whenever value orientations are touched, whatever the method, and with lecture methods may be completely unrealized.

The general difficulty and weakness of the course, however, is that under the conditions of its uniqueness in the students' academic experience, a considerable portion fail to adjust successfully to the aims and the procedural techniques. During a fifty-minute experience three times a week, it requires exceptional ingenuity and skill on the part of the instructor to achieve even a minimal reorientation of the students to their education, or even of a dynamically effective number of them in order to achieve successful committee work. For success in committee procedure there must be student willingness to undertake self-education, and since the basic principle for training in self-assumed responsibility is giving responsibility, the weakness is compounded. Committees, of course, sometimes waste time, and if the resentment which this induces in better motivated committee members is ineffective in developing their corrective responsible action and leadership, the dereliction may even be rationalized in the group by cynicism about educational aims. The instructor who is skillful in discerning group morale can and should intervene and manipulate the group and personality situation constructively, but the resources and expedients are limited and sometimes ineffective. And the supply of teachers trained, skilled, and motivated for this sort of teaching is scanty, and the abilities difficult to discern and assess.

Finally, it must be admitted that there is prevalent and widespread among American students a reluctance to have one's education affect one's personality and social orientation. Too little of the student's past school experience has even partially prepared him for self-education, personality growth, and social self-awareness. Too often such aspects of education have been acquired almost wholly outside the classroom, and his classroom expectations are apathetic or negative as regards teachers, courses (especially required courses), and even general knowledge and intellectual activity. In the remote and subtle problems of modern society, he may remain immune to such influence. Those experiences which touch his apathy about his real self-education in social relations he may and often does resent. There is therefore a morale problem in the course, never wholly solved, a feeling of resentment at what is felt to be "manipulation." Unfortunately, however, the only remedy is further application of and devotion to the course's principles and methods; this is how free minds are trained for the free and democratic society. The educator can only make evident and convincing his devotion to truth and freedom by pure and patent democracy in the classroom in relations with his students. If he still fails, he realizes that student opinion is not the educator's only lodestone, and the real evaluation must be based upon ultimate value and relevance to the student's later life history and to the social developments of our age.

By and large the effect of the course in problems of modern society is good. The students learn enough social science and absorb enough acceptance of "the world's inescapable routines" to induce in them patience; and they also grow sufficiently in personal assurance of ability and in techniques of reasoning, policy forming, and planning in a troubled world and society to strengthen their confident determination "to hope, to reason, and to plan."[13] That may well be the immediate goal—it is certainly an important goal.

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[13] Dollard and Miller, *Personality and Psychotherapy,* McGraw Hill, New York, 1950, p. 130.

GEORGE E. OUTLAND
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CHAPTER XV. *DEVELOPING A COURSE IN SOCIAL SCIENCE*

WITH due allowance for space limitations, we shall attempt to describe: (1) the background of the General Education program at San Francisco State College; (2) the various steps in the development of the social science part of that program; (3) some of the problems encountered in the development of these courses; (4) the reorganization of the entire program in 1951-1952; and (5) some of the many problems which still remain, and some approaches to their solutions.

BACKGROUND OF THE GENERAL EDUCATION PROGRAM AT SAN FRANCISCO STATE COLLEGE

The story of the development of the General Education program at this institution has been told in at least two articles: the excellent chapter by President Leonard in Stickler's volume,[1] and the briefer but equally valuable article by Dean Bell.[2] These two accounts relate the philosophy underlying the program, the thorough study of student needs, the curriculum problems encountered, the painstaking steps through which administration and faculty cooperatively ironed out many differences of opinion, and the relationship of the curriculum to the "extracurricular" activities.

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[1] J. Paul Leonard, "Building a Curriculum for Student Needs at San Francisco State College," in W. Hugh Stickler (ed.), *Organization and Administration of General Education*, William C. Brown Company, Dubuque, Iowa, 1951, pp. 183-199.

[2] Reginald Bell, "A General Education Program Based on Student Needs," *School and Society*, vol. 70, 1804 pp. 39-40, July 16, 1949.

Both articles stress the major assumptions and aspects of the program, among which were: (1) that it should be based upon demonstrated needs of the students at this particular institution, as shown by an intensive survey of the student body; (2) that all members of the faculty should be given the opportunity to work on this revision of the curriculum, regardless of divisional lines; (3) that there should be continuous evaluation of content, method, and results; (4) that democratic procedures should at all times prevail in the planning and carrying through of the program; (5) that the General Education courses should be administered and taught through the regular divisions of the college, rather than by a separate "basic" or "general" college; (6) that the "core curriculum," once formulated, should be required of all lower division students; (7) that this same core curriculum should, in general constitute the basic requirements of the lower division, regardless of the student's field of major concentration; (8) that there should be a sequence (to which exceptions could be made when indicated) starting in the first year, and running through the first semester of the junior year.[3]

The General Education program was launched in the fall semester of 1948. A basic core curriculum of forty-five required units was finally agreed upon, and is still the pattern, as, with other minor exceptions, are the rest of the points mentioned in the preceding paragraph. Evaluation studies now under way may indicate some desirable changes.

STEPS IN THE DEVELOPMENT OF THE SOCIAL SCIENCE PROGRAM

The first of several faculty conferences on curriculum reorganization, held in the fall of 1946, decided that a General Education program was desirable; the second, in the fall of 1947, determined to proceed as soon as possible. Four areas of student needs were blocked out, and a General Education Committee selected for each of these areas. On each of these area committees was at least one representative from each division in the college, so that the tentative goals and suggested topics for each course in the college-wide General Education program were determined by faculty members, not from particular divisions, but from the whole institution.

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[3] An interesting trend in General Education programs in recent years has been the trend toward more courses in the upper division. Two extremely interesting experiments, among others, are those now being conducted at Colgate University and the Pennsylvania College for Women. This trend is being followed with interest as to its implications for the program at San Francisco State College.

The four areas to be covered by the required block of forty-five units were: (1) home and family living; (2) personal development; (3) occupational orientation; (4) socio-civic relationships. After months of discussion it was finally decided that twelve units of the General Education program should be allotted to the area of socio-civic relationships, that these units would be best allocated by breaking them down into four three-unit courses, and that after the socio-civic committee had drawn up the tentative goals and suggested topics, these should be turned over to the Social Science Division, which would have the responsibility of implementing them with specific, detailed courses.

The committee on socio-civic relationships met regularly for more than a year. With instructors from such fields as natural science, physical education, and the humanities having equal voice with those from social science, tentative goals and suggested topics were drawn up for the four General Education courses. The sequence of courses which was finally recommended by the area committee and submitted to the Social Science Division was:

1. The Contemporary Social World
2. The Development of American Institutions and Ideals
3. Economic Organization and Problems
4. International and Intercultural Relationships

The area committee also recommended that these twelve units be considered one twelve-unit course, taken sequentially over four semesters, and that the first course be considered both a course in itself, and preparation for the nine units to follow. Furthermore, it recommended (a recommendation, incidentally, which was not received with enthusiasm by the Social Science Division) that, since the first semester would be concentrating on "individual development," and since several units of electives were to be permitted, the first departmental course in social science should logically commence in the student's second semester. The wisdom of this decision is still being debated!

At this point it might be of value to list the tentative goals and suggested topics recommended by the socio-civic committee for the first course, The Contemporary Social World. While several substantial changes have been made during the past four years, these original recommendations were in large part accepted by the Social Science Division for the beginning course, and still retain considerable influence on the course.

GOALS WHICH ARE ESPECIALLY PERTINENT TO SOCIAL SCIENCE I

The educated citizen:

1. Is familiar with the methods used in the social sciences in gathering, interpreting, and evaluating data about social relationships, and so far as possible, utilizes these methods in formulating and testing his own conclusions about social problems.
2. Recognizes that social and political institutions were built by man to satisfy human needs, and participates through the democratic processes to modify these institutions, when deemed necessary to serve changing conditions better.
3. Recognizes the fallacies common in discussion of modern social problems and their solution, and applies rigorously the criteria of straight thinking in analyzing proposals for such solutions.
4. Critically evaluates groups and organizations that attempt to influence public opinion, through the various mass media of propaganda, e.g., radio, newspapers, motion pictures, etc.
5. Is fully aware of the wide difference between education and propaganda, and knows something about how to work as an individual and as a member of a group to help keep education free from propaganda.
6. Participates actively in community life in the building of an intelligent and informed public opinion.
7. Participates actively, intelligently, and democratically in the activities of collegiate and community organizations.
8. Is an alert student of the current American scene; reads widely, observes with interest, and in various ways keeps himself informed of current problems, trends, and their possible implications for himself and for society.
9. Has a deepened philosophy of the nature, purpose, and implications of democracy, the alternatives to the democratic process, and the meaning to the individual of both democracy and the alternatives.
10. Realizes that society is changing at a rapidly increasing rate; that there are numerous factors, including the physical environment and the

nature of the human individual which condition such change; that change and progress are not necessarily synonymous terms; and that it is ever important to evaluate change and proposed change in the context of the meaning of democracy.

SUGGESTED TOPICS TO FORM BASIS OF CONTENT FOR SOCIAL SCIENCE I

1. The social nature of the human individual. (This material to be related to pertinent courses in the individual development field.)
2. Purposes and motives of social organization; varieties of social control
3. The area and scope of the social sciences
4. Problems and methods in understanding social relationships:
    a. Methods of gathering, interpreting, evaluating, data
    b. "Objectivity" in the study of social relationships (motivations)
    c. Various techniques: observation, statistics, case histories, etc.
    d. Cause and effect in social relationships
5. Straight and crooked thinking about social relationships:
    a. Fallacies in logic and social thinking
    b. Factors in the formation of public opinion in the modern world
    c. Methods and techniques of propaganda; their identification
    d. Evaluation of sources of information
6. The place of the physical environment as a factor influencing human behavior
7. Culture and cultural change:
    a. Nature and meaning of culture
    b. Culture and the important social processes (competition, cooperation, stratification, etc.)
    c. Culture and important social groupings: institutions
    d. Unique and distinguishing characteristics of American culture
8. Culture, cultural change, and resulting "social problems"; cultural lag:
    a. Outstanding examples from the American scene
    b. Social progress
9. The nature and meaning of democracy:
    a. The growth of the democratic concept
    b. Democracy *vs.* authoritarianism in social relationships
    c. Democracies, governments, and economic systems
    d. The dilemmas of democracy

In the light of the recommendations of the faculty-wide area committee, it is interesting to look at the outline for Social Science I as finally agreed upon by the Social Science Division. The following was the original list of major topics (and it should be emphasized again that revision has been continuously taking place).

SOCIAL SCIENCE I. THE CONTEMPORARY SOCIAL WORLD

I. The Social Nature of the Individual:
  1. From "personal development" to "social development"
  2. The individual as a social being
II. Social Relationships:
  3. The nature of social relationships
  4. The social sciences
  5. Straight and crooked thinking about social relationships
  6. Understanding and analyzing propaganda
III. Culture and Cultural Change:
  7. The nature and meaning of culture
  8. Culture and the natural environment
  9. Culture and the population
  10. The individual and his culture
  11. Culture and the various social processes
  12. Cultural change and its importance
  13. Social change and the American culture pattern
  14. Social change and social progress
  15. Change, progress, and social planning
IV. Democracy and Contrasting Ways of Life:
  16. The nature and meaning of democracy
  17. Democracy and American culture today
  18. Some problems and dilemmas facing American democracy
  19. Education and American democracy
V. Conclusion and Summary:
  20. Evaluation of the course

The above does not give a full picture of how closely the division accepted the recommendations of the area committee; practically all the topics suggested by the latter were incorporated somewhere along the line. The objectives, while condensed and rewritten, remained essentially the same.

The teachers of this pilot course were drawn entirely from the regular Social Science Division staff; among them were anthropologists, geographers, economists, historians, political scientists, and sociologists. This fact constituted a problem at the outset, inasmuch as there was the natural tendency for specialists to emphasize or minimize materials according to their own fields of concentration. However, it also had the real asset of enabling this same group of specialists, meeting together as "generalists," to evaluate constantly the development of the course, to bring contributions from the many aspects of social relationships, to criticize constructively and examine current and proposed materials, and to cross-fertilize all phases of the work. It was especially encouraging, in this connection, to note the way that anthropologists, sociologists, and geographers (representing the special fields from which a major share of the content for this pilot course was selected) debated, demurred, and finally decided!

With the first course in the teaching (and it was fervently hoped, learning) stage, the area committee turned its attention to the remaining nine units. Similar procedure was followed: tentative goals were agreed upon, suggested topics were drawn up, and referred to the Social Science Division. As was the case in working out the definite outline for The Contemporary Social World, so did the instructors teaching each of the other three courses, drawn from the regular staff of the division, constitute themselves a standing committee for the cooperative planning, evaluating, and improvement of their respective courses.

The following was the original over-all social science program in General Education as finally worked out. Listing only the major topics for each course, and mentioning again that many changes have already taken place (and many more will doubtless occur):

Social Science I. The Contemporary Social World
  1. The social nature of the individual
  2. Social relationships
  3. Culture and cultural change
  4. Democracy and contrasting ways of life
  5. Conclusion and summary

Social Science II. The Development of American Institutions and Ideals:
  1. Factors basic to the development of the American community
  2. American traditions and ideals
  3. The development of American traditions and ideals
  4. Major problem areas in contemporary American government

Social Science III. Contemporary Economic Society:
  1. A broad view of the American economic system
  2. Foundations of economic activity
  3. Resources, organization, and control of production
  4. Labor organization

5. Government and the economy
6. Role of the consumer: interdependence of production and consumption
7. Economic systems
8. Some selected economic problems

Social Science IV. International and Intercultural Relations:

1. Elements of national power
2. International economic relations
3. The state system and international political relations
4. International organization
5. Intercultural relations (the world society)

One aspect of this twelve-unit required program that is especially significant is the final course, International and Intercultural Relations. So far as we know, this is the only example in the country where all lower division students are required to take three units in this field. Some eyebrows were raised at the outset of the planning, when it was suggested that one-fourth of the entire social science bloc of time be devoted to this area. However, there soon developed substantial agreement on the part of the members of the college's over-all General Education committee, the socio-civic area committee, and the Social Science Division itself that not only do international and intercultural problems pose one of the most important challenges to American citizens, *right now* and in the future, but also that there is, perhaps, more ignorance and prejudice in this field than in any other phase of social relations. While many changes in content and organization have taken place during the four years this program has been evolving, there has been no suggestion at any time that International and Intercultural Relations be dropped and some other course substituted for it.

PROBLEMS IN COURSE DEVELOPMENT

In the planning and executing of a program of this scope, particularly without a special school or division of General Education, and with all planning and teaching being done by the regular members of the social science staff, numerous problems were encountered, and many are still being encountered. Some have been solved, some have been partially met, but new ones are constantly arising. A few of the more important are discussed here.

Should or Should Not There Be Standardization Of Reading Materials?

This question was resolved without too prolonged controversy. It was decided that in each of the four courses there should be a common outline (later to be developed into a syllabus) and a common text or series of readings. Beyond this point, each instructor was to feel free to require such additional readings as he thought desirable. For example, one instructor suggested the reading of certain sections of *The United States News and World Report,* another has made compulsory the reading of the "News of the Week" section of *The New York Sunday Times,* while a third has asked all of his students to read either *Newsweek* or *Time* in addition to the basic text materials. Practically all instructors in all sections of all four courses request the reading of one or more of the local daily papers.

Should Materials in the Course Be Standardized As to Sequence?

The instructors in Social Science 1, 3, and 4 (now numbered 10, 30, and 40, respectively), have tacitly agreed that there should be considerable flexibility in sequence of course materials, believing that different teachers prefer varying order of presentation. To date this has not been the case in Social Science 20, but would probably pose no problem there either. As the committee for each course is developing its own syllabus, it is contemplated that these syllabi will be in loose-leaf form, not only to permit this flexibility in sequence, but also to permit a greater degree of adding or discarding materials as experience may indicate.

Should There Be Standardized Examinations for All Sections Of the Same Course?

For each of the four courses there are several sections, ranging in number from four to ten depending upon the particular semester. The number of students in each varies from twenty to fifty, depending upon several factors (not the least important of which is the time of day!). It had been decided early in planning that each instructor in the General Education courses would meet his own sections for all purposes, that is, that there would not be a large lecture section for several hundred students which would then be broken down into the smaller traditional quiz sections. Recognizing that each instructor served in a personal guidance capacity to his students, it was thought best to have *all* teachers meet *all* their section for *all* purposes *all* semester.[4]

This decision immediately posed the question, "Should there be standardized examinations for all sections of the same course, in whole or in part?" The conclusion reached by the instructors in the General Education program was overwhelmingly in the negative; as a matter of fact, there was practically no sentiment in favor of such standardized tests. Consequently, each instructor has been free to use in his own sections the types of evaluation which he believes to be most appropriate for his particular style of teaching, the materials to be covered, and his particular students. Future experience may warrant reexamination of this decision.

What About Method?

One of the most promising developments in American higher education, considerably stimulated by the General Education movement, has been a revitalizing of experimentation in teaching method. As many of the leaders have pointed out, the goals of General Education are at least as closely related to the "how" as to the "what," and certainly the social science field is no exception. Arthur Naftalin has well expressed this point of view:

> . . . in general education the growth and adjustment of the student is regarded as the central focus. . . . Thus there is a tendency to regard general education as student-centered, whereas the older, more traditional forms are held to be subject centered. This tendency has led to an emphasis in general education upon learning through experience and participation as opposed to learning through passive observation and through verbalization that is devoid of experiential content.[5]

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[4] At one point in the program the question arose "What do we do with students from foreign countries taking General Education courses?" Language handicaps and other difficulties posed serious problems. One year a special section of Social Science 10 was offered for foreign students only; this experiment was abandoned, it being thought that the liabilities offset the assets in such procedure.

[5] "How Does Social Science in General Education Differ from Specialized Courses in the Social Sciences?" *Proceedings,* First Annual Conference, The Continuing Conference on General Education and the Social Sciences, Chicago, November 2, 3, 4, 1950, pp. 1-2.

Drawing its staff from a group of individuals with a wide variety of teaching methods as well as a rich background of living experiences, it has been the thinking of the Social Science Division at San Francisco State College that each instructor should be encouraged to use those methods which appeal to him as most effective, and in which he personally believes himself to be the most competent, always remembering that the student has top priority. Our General Education teachers do not believe that there is *the* method or even *the best* method. It has been our philosophy that just as the goals of General Education can be achieved by different emphases in subject matter, different types of sequence, different forms of class organization, and different administrative setups, so can they be achieved by different methods of instruction. The man who is an excellent discussion leader may be a comparatively poor director of field trips. The teacher who is able to stimulate class panels and debates to the point where they become exciting learning experiences for students may be dull and dreary in a larger section where some reliance necessarily must be placed on the lecture method. Teacher A may utilize to a high degree visual aids in presenting social science materials; Teacher B may prefer to take his students on a visit to San Francisco's Chinatown for firsthand observation of contrasting culture patterns, housing congestion, and unsanitary health conditions.

This is not to be interpreted as meaning that all members of the teaching staff are not constantly being encouraged to explore new methods, to inform themselves of new teaching devices and aids, and to visit the sections of other instructors for possible hints that might improve their own classroom work. It *does* mean, however, that every attempt is made to capitalize on the special talents and abilities of each teacher, rather than trying to make all conform to a single pattern of methodology. The more varied the classroom experiences of the student, the richer should be his learning. The more each instructor can vary his teaching, the better should he be able to help his students attain the objectives of General Education.

During the year 1951-1952 one of the authors of this chapter was fortunate in being able to travel, under a grant from the Fund for the Advancement of Education, to more than thirty American colleges and universities, studying programs of social science of a

General Education nature. He talked with many instructors and administrators. He was able to "sit in" and observe classes. There is as wide a variation in method as there is in course content and administrative organization. Some institutions are consecrated to one form as *the* method. Others are experimenting. Some, as we do at San Francisco State, permit wide variety on the basis of the talents of each instructor. One college will use the problems approach almost exclusively, another is devoted to the case method, while still a third relies heavily upon individual projects for each student. In one institution large lecture classes are supplemented by smaller discussion groups; in another there will be no lecturing whatsoever. And so it goes. With the exception of the narrow, exclusive lecture-and-quiz-and-lecture-and-quiz, there was the strong conviction at the end of this year of travel and observation, that there was merit in all methods, that no one could be prescribed for all teachers and all institutions as *the* one, and that it is eminently wise to draw heavily upon the abilities and backgrounds of each instructor.

One hastens to qualify the last statement by saying that considerable care should be used in the selection of instructors in *any* General Education program. Some college teachers much prefer to devote their time to research and to specialized upper division courses. These men and women can make their greatest contribution to higher education if permitted and encouraged to continue in their fields of greatest interest. On the other hand, every encouragement should be given to men and women of broad background and experience, those deeply interested in the personal development of each student, to devote at least a part of their teaching time to General Education. Doctorate programs cutting across social science fields, such as that at Syracuse University, will probably accentuate this trend.

WHAT SHOULD BE THE RELATIONSHIP OF THE GENERAL EDUCATION COURSES IN SOCIAL SCIENCE TO THE REST OF THE OFFERINGS IN THAT DIVISION?

Early in the planning of the General Education program at San Francisco State College it was decided that in certain divisions, including Social Science, the required block of General Education courses would constitute *the* lower division requirements in their respective fields. Other lower division offerings would continue to be given as electives, but not required, even for majors. The various departments within the Social Science Division met this situation by overhauling the lower division courses, taking from them the materials deemed to be the most essential for General Education purposes, dropping certain courses entirely, and consolidating in the remaining ones the more specialized material. We asked ourselves the tantalizing question, "Assuming that our students never take another class in social science, what are the materials and experiences which we think are *most* important in helping to develop alert, informed American citizens?" The debate has continued ever since! For example, under the old program there had been offered two elementary courses in economics—Economics 1A and 1B. The committee working on the Social Science 30 course, Economic Organization and Problems, meeting hour after hour for many months, cooperatively skimmed from the two old courses what were thought to be the general essentials (such as materials on consumer problems, capital-labor relations, the American production scene, etc.). They then combined these with materials from other social science fields, gradually coming to agreement upon the fundamental content of their particular phase of the General Education program. The more technical and specialized materials of the two old courses were then combined into a new one, Economics 50, moved up to the sophomore year, and recommended although not required, for majors in economics. Economics 1A and 1B were dropped.

A similar reorganization took place with the two beginning courses in sociology, Sociology 61-A and 61-B. General materials were abstracted from both courses, and combined with anthropological, historical, and geographic materials in the building of Social Science 10. Sociology 61-A and 61-B were dropped entirely, and a new upper division course, Sociology 100, added in the upper division as a requirement for majors in Sociology and Social Service.

It should be emphasized again that the twelve-unit block of General Education courses in social science fulfilled the lower division requirements for *all* departments of the division. While some adjustments have been necessary, this transition has not been so difficult as might have been anticipated.

What Should Be the Relationship of the General Education Courses In Social Science to the Other Phases of the General Education Program?

As previously stated, the first work in social science under the new program was to commence in the second semester. This had been deliberately planned in order that in the student's General Education work his first semester might be centered around his personal development—especially emphasizing basic communications, human health and biology, and psychology. Social Science 10 therefore has been taught with the understanding that the student has already been exposed to these three phases of General Education. References are constantly made to the close interrelationship between the materials and experiences in The Contemporary Social World and those encountered in biology, psychology, and communications.

A few examples of this integration are seen by mentioning some of the subtopics of the current Social Science 10 outline: Social Science and Logical Thinking (with special reference to communications); The Races of Mankind (with reference to both biology and psychology). Social Science 10 is attempting to relate its work even more directly to the rest of the General Education program as illustrated by such special topics as The Biological Basis of Human Behavior and The Psychological Basis of Human Behavior. The staff maintains that, instead of duplicating or overlapping materials in other courses, this cross reference is really helping the student to realize the oneness of human experience, to show him the different approaches to the same phases of his own life, to help him to integrate his college work, and it is hoped, himself.

REORGANIZING THE PROGRAM

Throughout the four years of the General Education program there has been constant experimentation, self-criticism, and proposals for change. As a result of the fellowship granted to one of the authors, he was able during the academic year 1951-1952 to devote full time to work on proposals for such reorganization in the social science area. The other author was granted some released time from his teaching to help on what was considered the most pressing problem, complete reorganization of the first course. The Contemporary

Social World. During this same year, committees of the other three courses intensified their own work, and coordinated it with the Social Science 10 group.

The year was not an easy one. The work entailed dozens of extra hours of time, many of them in the evening, for instructors already carrying full-time schedules. The compromises were many, and in some cases tentative. At the end of the year, however, three major achievements had been made:

1. In all four courses the objectives had been restated, most of the changes having been based upon classroom experience.
2. In three of the four courses (Social Science 10, 30, and 40) detailed outlines had been agreed upon, to be used by all instructors in their respective sections. Future revisions, of course, were contemplated. The Social Science 20 course, its title now changed from The Development of American Institutions and Ideals to The American Way of Life, had been reorganized also, and broadened to include materials recently required by the California State Legislature on state and local government. The new syllabus in this course is now in process of development.
3. The frequent meetings, tedious as they seemed at times, brought an interplay of ideas, and a closer unity among the instructors in the division than had ever before been achieved. It was not simply that the members came to know each other better; rather that they gained insight to materials, resources, methods, and problems of social science departments other than their own specialty, as well as greater appreciation of their colleagues.

PERSISTENT PROBLEMS AND PENDING PLANS

The major problems which any division of any college encounters when it embarks upon a program of General Education have been well summarized by W. Hugh Stickler.[6]

No institution can attempt a basic curriculum reorganization without running into such knotty ones as integration, distribution of program, high school-college articulation, and especially evaluation. All of these and others have been encountered by the faculty at San Francisco State College. Some have been successfully met, some are now being dealt with; many remain as major challenges.

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[6] "Organization and Administration of General Education: Summary and Persistent Problems," in W. Hugh Stickler (ed.), *Organization and Administration of General Education*, pp. 423-430.

In the social science program, the following appear to be among the more important remaining problems:

What phases of course content should be cut from the present syllabi? It is generally agreed that all four courses are attempting to cover too much ground, and that much of the present content must be omitted. There is wide difference of opinion, as might be expected, however, as to where the knife should be applied!

What should be the basis of selection for teaching personnel? Originally it was contemplated that each member of the division would teach at least one General Education class. Experience has raised the question as to whether certain instructors with specialized interests should not be left free to concentrate on their own upper division courses and their research, while others with greater interest in General Education objectives might be encouraged to devote a greater portion of their teaching schedule to this aspect of the work. Thus far no member of the division has taught full-time in the General Education courses, all having certain specialized interests which they have been encouraged to develop.

How can the social science work be more closely integrated within the division itself, as well as with the rest of the General Education program? A promising start has been made in answering this question, but much remains to be done. One illustration might show the manner in which the intradivisional integration has been approached. Probably no single word is being used so much in American life today (and often inaccurately) as "communism." Certainly our students need to understand what communism is if they are to realize its dangers. In each of the four courses this topic is brought into the discussion at pertinent points. In Social Science 10 the student is exposed to it as an over-all philosophy contrasting to the democratic way of life. In Social Science 20 he is made aware of the differences between the structure of American government and that of the Soviet system. The contrast in civil liberties between the two systems is especially stressed. In Social Science 30 the economic aspects of communism are contrasted with those of our own nation. Finally in Social Science 40, students are made aware of the international aspects of communism; they study it in the context of power politics, conflicting patterns of culture, and in historical perspective.

How can the program be more adequately evaluated? To what extent can the objectives of the over-all program as well as those of individual courses be better measured? This is probably the number one question for all General Education programs in all institutions! In spite of much talk on the subject, almost nothing tangible has been accomplished to date. Our staff is currently drawing up an ambitious project of pretesting applicable to all students entering Social Science 10. It is hoped that enough data will be available to help us toward a more realistic evaluation of our work.

How can our teachers increase their own effectiveness? In view of the fact that there is complete freedom to instructors regarding method, should there be an intensive in-service training program aimed at broadening the methods of the staff in the General Education program? All instructors are already carrying full teaching loads, as well as committee assignments, counseling and advising, etc. Might not such an in-service program, entailing as it would hours of additional time, defeat its own purpose?

How can the resources of the community be better utilized? San Francisco is one of the richest cities in the United States in its potential for interesting projects in the study of human relationships. A fascinating historical background, a heterogeneous population, a compact area, neighborhoods of great cultural diversity, a tradition of capital-labor strife, past and present problems of racial differences, an unusual structure in city-county government—these merely suggest a few of the resources which an imaginative teacher might use in enriching his social science teaching. Several instructors in the General Education program have already embarked upon such utilization; much more can and probably will be done. This process can be accelerated when the college is no longer split into two campuses several miles apart, but has completely settled in its new 100 acre plant.

What adaptations, if any, should be made for special types of students, such as those from foreign countries, transfers from junior colleges, and those who must necessarily prepare early in their college courses for specific graduate work? At the present time, all entering freshmen are required to take the entire twelve-unit block of social science work in General Education. Individual adjustments are made for transfer students. However, what of the increasing number of foreign students, many of them with a meager knowledge of the English language? Should adjustments be made for these students so far as their General Education requirements are concerned? If so, what and on what basis? While this group is a relatively small proportion of the student body they are an important part of it, and their needs entail special consideration. Much thought needs to be devoted to the small number of students who have early mapped out definite plans for graduate work, and whose lower division program may be thus affected.

Should any part of the General Education program be optional? The required common core of twelve units in social science in itself poses a question: could and should there be additional courses offered on a General Education basis from which the student might select? Most American colleges permit a certain amount of student choice in mapping out the General Education courses? Should we at San Francisco State reexamine our position on this question? Or may there not be good grounds for continuing a solid common core?

The above illustrate a few of the questions which members of the social science division are asking themselves. Many more might be listed. The fact that there is such self-examination is, in itself, a real achievement.

Conclusion

We at San Francisco State College are still in the experimental stage in our General Education program in the social sciences. There are many rough spots ahead. However, slowly as the program has developed, experience has demonstrated that cooperation and compromise build more firmly and more permanently than a hastily improvised dictation handed down from on high. Through every administrative phase of the development, from President, Dean, General Education Committee, Divisional Chairman, course chairmen, and course committees, these processes of compromise and cooperation have prevailed. At all times the emphasis has been on "How shall we do this?" rather than upon "Do this." Because of this spirit, there is a strong feeling that what has been accomplished thus far has been built on strong foundations, even though experience may demonstrate the need for alterations in the superstructure. Because of it, there is a pronounced feeling that such necessary alterations will eventually be made, slowly and patiently, but above all, cooperatively and democratically.

ROY A. PRICE,
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CHAPTER XVI. *PROBLEMS IN DEMOCRATIC CITIZENSHIP*

ALTHOUGH training for citizenship at Syracuse University is among the oldest offerings of its kind, it still remains experimental, subject to continuing revision. Those students who saw its beginning have watched its development through their children, whose offspring in turn may see further changes in the third decade of Syracuse Citizenship Education. While it has mirrored, it has also modelled the evolution of the social sciences in General Education.

THE UNIVERSITY SETTING AND THE HISTORY OF CITIZENSHIP TRAINING

The significant place of citizenship education at Syracuse was made possible through the gift of Mr. George H. Maxwell, with which was created The Maxwell School of Citizenship and Public Affairs. He had definite objectives in mind, expressing them in these words:

> My idea is to develop a body of leaders, especially trained in citizenship who will go out through this country as educators, statesmen, financiers, business men, etc. to upbuild the foundations and bulwarks of Citizenship intelligently and patriotically, so that the masses of the people may come to have a generally disseminated knowledge of the value, importance, and distinctiveness of their United States Citizenship.

In accordance with Mr. Maxwell's wishes, the School has established specialized training programs for government, administration, and teaching, along with a basic course in citizenship. This basic course expanded from the earlier emphasis on politics and government to include the broader analysis of man's place in society.

Perhaps the early outstanding characteristic of this basic course was its vitality, achieved through the cooperative efforts of staff and administration. Heading the administration was the late Dean Mosher, who provided exceptionally gifted leadership as well as sanction from the administration. For his staff Dean Mosher gathered together senior faculty members from the several social science departments. This group met weekly at luncheons, where they planned and revised the content, outlines, materials, and lectures for the course. After considerable discussion, this group prepared reading material to be mimeographed for the student. It was sometimes suggested that the education of the staff perhaps exceeded that of the student!

Many of the staff members were, of course, interested in research and teaching in their respective fields, rather than in the General Education approach. At first their tendency was to provide too broad a coverage of factual material, of the summary type, rather than thoughtful analysis. They tended to judge the student's progress by his acquisition of information *per se,* rather than by his ability to understand the material at hand. But under Dean Mosher's able leadership efforts were made to turn the emphasis from words on the page to the actual experiences of men. However, with the death of Dean Mosher, and the publication of text materials, the staff was for a time not only deprived of effective leadership but also of the vitality of constantly changing material when the printed book became the text for the course. This put an end temporarily to reinspection and revision.

In 1947 and 1948 the entire University faculty was asked to examine the nature of the University program. This self-survey inspection, of course, also directed the spotlight on the state of citizenship training in the Maxwell School. The survey revealed:

> . . . data which suggest that past course requirements have been rather heavily loaded with emphasis upon specialization, that the pattern of courses which has characterized the record of many recent graduates shows less breadth than may be desirable, that the predominant number

of courses even in the lower division tend to stress specialized goals rather than the aims of General Education, that many students believe their progress toward objectives which both they and the faculty regard as very important has been slight rather than substantial, and that the performance of students on tests related to some of the major objectives of General Education tends to reflect a rather limited degree of knowledge and maturity in fields outside the one of major concentration—all these findings, in short, are regarded by the committee not as criticisms of the past or present but rather as challenges to the future.

In the Maxwell School, this challenge to the future was anticipated in part by the appointment of a new director of the citizenship program. During the year following the completion of the survey, an all-University committee on General Education developed a new comprehensive statement of objectives for the University. Briefly, these aimed to give the student an awareness of his physical environment, an appreciation of the philosophy, literature, and arts of the past, skill in communication (through effective writing and speaking) for the present, and the development of his personal talents and interests for his own satisfaction as well as for society's in learning to live democratically in a free society, today, his own community, while ever searching for peace in the world for tomorrow. The University committee had rejected the principle of block courses in favor of concentrating on a single basic course in citizenship. Almost simultaneously with the statement of the objectives from the University self-survey, came the appointment of a new program director in the Maxwell School; this resulted in renewed and intensive attention to the basic citizenship course.

THE CITIZENSHIP PROGRAM IN ITS CURRENT STAGE

As the Maxwell School's course in citizenship evolved through the several phases, it consistently focussed its primary attention on one objective: the role of the individual citizen in a free society. Consistently, too, it has frankly stressed the need for social action on the part of all educated citizens. Understanding democracy and the need for participation in it have been steady goals surviving all curricular experiments and alterations. Assuming that the major responsibility of university training in democratic process is to develop the individual in that process, the citizenship course is organized towards that end while fitting into the relatively new category of General Education in the social sciences, with no pretense toward becoming the orienting course, however, in that field. Democratic process is conceived as permeating the life of a free society to such an extent that political organization and structure cannot be the sum of student preoccupation in exploring the field of citizenship. Social relationships in the broadest sense—political, economic, sociological—form the subject matter of the course. It is concerned with the enlightened, creative, and cooperative part which individuals may play in the great community of freedom, in which both political and nonpolitical social activities are pervaded by the democratic ideal.

The approach of the course is through the study of several of the recurring problems of free men: the critical use of intelligence, limitations on personal liberty, equality of opportunity, loyalty, compromise, planning for social ends, the relation of the economy to the state, the complexity of democratic institutions, and the relation of the state and the individual to other countries and peoples. In all these the student is taught to recognize the tentative nature of democratic solutions, to see the free life as a dynamic process in contrast to the static pretensions of totalitarianism. The potential worth of the individual is thematic; thus the dignified person in a context of *people* emerges personalized in contrast to the numerical individual in a context of *the people*.

At the outset the citizenship course introduces the tools of responsible thinking, of methods of logic, and of clarified expression whether oral or written. As the student uses these tools, his attention is centered upon a case. Perhaps it is a "legal" case, or simply an example, such as an incident, or a narrative, or even an historical document, with theoretical, expository, or descriptive readings for illumination.

At present the case which introduces the problem of responsible thinking consists of a series of articles translated from the *New Soviet Encyclopedia* and placed parallel to articles on the same subjects drawn from *Americana* or the *Brittanica*. The articles are taken almost at random from those under the letter *A*—Atlantic Treaty, American Legion, American Federation of Labor, Arrest, etc. The student's exposure to this case brings a kind of shock of healthy discovery. By comparing his personal knowledge with the accounts before him he sees what can be done with words and how the process of thought can be made to serve predetermined ends, with or without adequate evidence. The chief purpose here is not simply "showing up" the totalitarian scholarship of the Soviet Union. This is a by-product of the study, to be sure.

But the student is impressed at the same time by the fact that Soviet propaganda frequently derives from unpleasant facts which Americans gloss over or eliminate. Thus, while the Soviet article on the American Legion is a gross distortion intended to prove that the Legion is an organization of fascist storm troops, it is nevertheless true that the *Americana* article makes no mention of certain superpatriotic activities of the Legion which the American student knows about from his own experience and which provide a bit of factual basis for the Soviet distortion. The articles, in general, offer abundant opportunity for the study of logical method—the processes of deduction and induction—and of the manipulation of language to convey emotion, tone, subjectivity, or objectivity.

The case then is followed by a number of readings which deal discursively with the ideas and principles suggested by it. Dewey and Larrabee on logical thinking and scientific method, Lippmann on public opinion, and Cantril on propaganda analysis will suggest the sort of readings employed for this purpose. The individual instructors in the course keep the lessons learned from this topic constantly in the foreground as the course proceeds. Exercises and tests are frequent, and an objective examination in critical thinking is given at the opening of the course and repeated at the end of the year. A statistical study of these test results shows that students who have taken the citizenship course normally score significantly better on critical thinking tests than do other students.

The second topic introduces the student to the problem of the relation between a constitution and democratic reality as he explores the idea of democracy. In recent years the case has been a comparison and contrast of the constitutions of the United States and the Weimar Republic of Germany. In the future the structure of the Soviet government will be substituted for the latter. As he proceeds through the case and the readings, the student sees in clearer perspective how the democratic will of a people determines the validity of organic law. At the same time he is shown how the totalitarians challenge the basic concepts of democracy. Thus the assumption is that democracy cannot be successfuly defended without clear understanding of what it is and how it is criticized. A number of the readings assay the American experience and elucidate the American hope, while others suggest modern criticism of democratic assumptions and indicate a recurring doubt regarding democratic possibilities.

A third topic deals with the decline of democracy in Germany. The readings are drawn, on the basis of essential relevance, from the whole history of social thought from Aristotle and Plato, through Locke and Jefferson, to Bryce, Tocqueville, Lilienthal, Dewey, Lenin, and Ehrenburg.

The next several topics develop certain of the more important subdivisions of democratic thought and practice. In these sections the students examine the civil liberties, the problem of loyalty, the ideal of equality, and the problem of planning in a context of freedom. The quality of the readings is suggested by the authors listed above. Some of the cases used are as follows: in the study of civil liberties, Near *vs.* Minnesota, Sacco and Vanzetti, the Peekskill riots, the California teacher's oath; for loyalty, Senate hearings on Jim Crow in the army; for equality, *Jonesville* and *Middletown*; for planning, the Tennessee Valley Authority.

In the later portion of the year the citizenship course moves into a consideration of America's relation to other countries, with special attention to the tension between freedom and communism. In this study, during the last several years, an expository text written by Maxwell School specialists has been used. Considerable time is devoted to an understanding of the history of Marxist thought and to the growth of Soviet communism. At the same time the European experiments in democratic socialism, as in Great Britain under the Labour governments, are discussed in detail as valuable background for understanding the context of complex relations in which the United States attempts to adjust its foreign policy. Certain concrete problems confronting the United States are singled out for elaboration, so that intelligent selection may serve instead of wider and more superficial treatment. Thus the reconstruction of Germany in relation to the total problem of Western Europe receives particular attention, as does the fall of China and the Korean War.

Throughout this latter portion of the course attention remains focused on the role of the individual American citizen: the extent and limits of his participation in the development of American policy, and the ways in which his citizen activity is similar or dissimilar to citizens in other lands. At the present time the staff of the Citizenship Department is engaged in preparing problem materials to replace the textbook exposition of our international relations, in the belief that the method used in the earlier part of the course is better adapted to achieve this continuing emphasis on the role of the citizen.

The course is organized on the basis of one lecture and two discussion periods each week. The heart of the course is in the discussions. The method is Socratic rather than expository. Thus the class, numbering about twenty-five to twenty-eight students, is looked upon as a citizenship laboratory in which the aim of participation by the individual can be encouraged and to a large extent realized. The instructor serves as moderator of a discussion which will turn on crucial points raised by problem materials in the text. More often than not, these materials are intrinsically controversial and represent the polar tensions which democratic process constantly strives to resolve.

The tentative nature of democratic conclusions is illustrated in homely fashion by the class process itself. The instructor makes no effort to impose his own view, though he may occasionally indicate that view. His function, rather, is to hold the discussion on the central theme and to sift out uncritical and irresponsible thinking as often as he can. Though he holds his students as closely as possible to fact and evidence, he is not primarily concerned with information, but with meaning and value. He will never be satisfied with a student who is content to accumulate information at the expense of understanding and insight. He makes little use of straight recitation. Though he may from time to time feel obliged to supplement some portion of the text with a ten or fifteen minute exposition of his own, the skilful citizenship instructor is much more concerned with such devices as formal or informal class panels, round tables, or group projects of analysis or decision.

The lecture, as used in the citizenship course, has a number of functions. It serves to give the various classes a sense of unity with others by bringing them all together once each week. It affords a modest chronological control on the tempo of the course by bringing all the classes to a common point. It affords an opportunity to correct certain readings by reference to strictly contemporary developments. And it gives the freshman students an introduction to some of the senior social science professors of the Maxwell School as well as to many eminent visitors from other universities and from public affairs. In recent years the lectures have been given by such political scientists as Carl Freidrich of Harvard, publicists like Max Lerner, historians like Hans Kohn, federal officials like Senators Wayne Morse or Ralph Flanders, municipal experts like Joseph McGoldrick, representatives of private organizations like Jerry Voorhis of the Cooperative League, or Chester Barnard of New Jersey Bell Telephone, and legal authorities like Thurman Arnold.

The lecture periods, however, are not always devoted to formal lecturing. Films are used several times each year. Examples would be *The Oxbow Incident* or documentary films on the TVA, whose relevance to topics described above is obvious. A successful experiment with a short play, produced by the Drama Department but played by students in the course, suggests that further use of this medium may become a permanent part of the program. Panels drawn from both students and faculty have met with fair success and excellent student response.

The more formal academic subject matter of the citizenship course is substantial. Indeed the one recurring criticism, both from students and from professors who have visited the course, is that too much is attempted. The staff is sensitive to this view but tends to prefer too much to too little as a calculated risk. In any event, the academic program is significantly supplemented by practical activities. Each student is required to undertake at least two projects each term, either by himself or in collaboration with other students.

Each fall the entire class conducts the drive for voter registration in the city of Syracuse, under the sponsorship of the League of Women Voters. The students ring every doorbell in the city. They interview residents and record their reaction to the call for registration. In the five years during which this project has been in operation the city's registration has steadily increased. The leg work involved in the registration drive rewards the students with much useful information. They learn what a political map looks like, what an election district is, what a ward is, how a political party is organized. They learn something, too, about popular attitudes toward the ballot and something of the problems involved in making democracy work.

Other projects include electioneering for the political party a student chooses, observation of municipal and county government, police functions, the role of such private organizations as service clubs, trade unions, and the community philanthropies. It is the feeling of the citizenship staff that the students never get enough of this kind of practical apprenticeship. But severe limitations are placed upon these activities by the sheer size of the course, which numbers over a thousand students.

STAFF ORGANIZATION FOR THE CITIZENSHIP PROGRAM

At Syracuse there has been major effort to prevent lines of leavage from forming in the working of any one department. Particularly has this been true in the operation of the Syracuse citizenship course, which has gone on for thirty years. Such healthy flexibility is not always found among academic programs, particularly when a course has already come of age. William James has this to say about the individual of twenty-five:

> Already at the age of twenty-five you see the professional mannerisms settling down on the young commercial traveler, on the young doctor, on the young minister, on the young counsellor-at-law. You see the little lines of leavage running through the character, the tricks of thought, the prejudices, the ways of the "shop" in a word, from which the man can by-and-by no more escape than his coat sleeve can suddenly fall into a new set of folds. . . .[1]

Such might well be said of a course with similar chronological status; but not of this course.

Such lack of leavage may largely be due to the composition of the staff. With separate administrative staff and budget, the instructional staff is independent, in the sense that it is not under the jurisdiction of any other department or interdepartmental committee as is the case at many universities. Over half the staff work in the general citizenship area as their full academic assignment, while others have dual responsibilities. The formal academic background of the staff includes: political science, philosophy, education, literature, history, and interdepartmental training in social science. Fortunately their experience beyond academic halls has been equally rich and diversified, as illustrated by Quaker aid service in the Spanish Civil War, membership in the Congress of the United States, work in party politics, and proprietorship and employment in the business world.

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[1] William James, *The Principles of Psychology*, vol. 1, Henry Holy and Company, Inc., New York, 1890, p. 121.

With such a staff it is not surprising that educational good judgment has been combined with discretion, as opposed to administrative valor, with the result that each teacher is granted a large measure of independence in the teaching and grading of students. This independence, which is applauded by the administration and guarded by the faculty, does not preclude the sharing of ideas and responsibilities on a cooperative basis. Cross-fertilization and vitality are assured by two major procedures. The first is the weekly staff luncheon meetings. The materials of this course are of such quality, and capable of such diverse illumination that no instructor feels that he knows the course, and all come to staff meeting anxious to compare notes as to the ideas currently under discussion. On occasion they come to trade vigorous verbal blows in reference to their ideas. In the process the vitality of the material is discovered anew and there is again a sense of identification and fresh approach. The luncheons are scheduled so that visiting authorities who have delivered the weekly lecture may be in attendance. The "picking of their brains" is an educative experience for the faculty, and on occasion appears to be something of the same for the distinguished guests. Another feature of the staff meetings is that each topic in the course is introduced by a planned discussion that deals directly with the objectives and alternative teaching approaches for the problem. The second major staff procedure is to be found in a system of working committees. They are four in number: editorial, teaching, research, and evaluation. The work of the editorial committee is offered in single illustration since the experience of the other committees shows itself, at least in part, throughout this report. The text materials undergo almost continuous revision by an editorial committee. The personnel of the committee changes, but the process goes on. The materials are changed in the light of staff teaching experience, further research, and the onrush of human events. To play upon words, it could be called a rationistic approach to an instrumentalist curriculum. The evolving course of study has the merit of growing out of staff experience and group thinking, with the result that it is directly suited to their abilities and resources.

One important aspect of staff operation is the role of graduate assistants or junior instructors. Each year a number teach the course, and the word teach is used with meaning, for they have faculty responsibility rather than being roll takers and quiz markers. Many of the assistants are completing their degree work in the Syracuse Doctor of Social Science program. This is a distinctive degree that emphasizes breadth of training in the social sciences and training for teaching competence. Citizenship is appropriate experience for these advanced students who are preparing to enter the college teaching profession. Their classes are observed, and they in turn are invited to visit the classes of the older staff members. They have conferences with senior staff and there is a brief orientation period for them each fall before they commence their teaching. And they themselves are class members of a seminar entitled The Teaching of Social Science in Higher Education. The relationship between the citizenship and the Doctor of Social Science programs at Syracuse is informal but mutually productive.

EVALUATION

The staff feels that the problem of examinations in General Education for citizenship is not likely to find an ultimately satisfactory solution (At what point is a student a failure in citizenship?), but that progress is being made toward sound evaluation against reasonably uniform standards. The major share of the student's standing is controlled by his individual instructor, who evaluates his students on the basis of brief quizzes, class participation, and achievement in extraclass projects. There are two departmental examinations each semester, one of the essay type, the other objective. While increasing ingenuity has been developed in the validating of objective questions, the retention of a place for the essay is favored in view of one of the course objectives; that is to build, continuously, students' ability to take data, analyze them, and develop tentative but sound generalizations. The measurement of critical thinking abilities and achievement has priority in the construction of all examination instruments.

Evaluation of the course is consistently carried on. As has been indicated, though instructors constantly reappraise the course, students too are invited to share in this reappraisal. This they do by filling out questionnaires wherein they give their judgment of teaching and of materials. Further, the results of encouraging students to have conferences with their instructors allows a staff sensitive to student reactions to make an additional appraisal. The students on occasion send representatives to staff meetings and faculty-student smokers, where there is a lively sharing of suggestions.

The exceedingly difficult task of assessing, in an over-all sense, the influence of the course upon students in terms of long-range changes of attitude and behavior is a task yet to be undertaken by the staff. But a careful beginning has been made in this area by a recent dissertation.[2]

THE END IS NOT YET

There is an impressive list of unfinished business. If the citizenship program were ever to be expanded at Syracuse, a number of areas that have of necessity been excluded would readily find a place. For example, the individual citizen would have a still better understanding of himself if more attention were to be given to the areas of personality, family life, and local community experience.

This leads to the vision of a laboratory and service center for practical research in civic problem areas. And this in turn is related to the possibility of an honors program and the development of a thoroughgoing internship system for a number of students. It is recognized that aseptic intellectual commitment to democracy without the experience of surviving in the crucible of citizen action is insufficient. Where that direct experience can be obtained along with guidance and evaluation, an ideal has been approached.

Further, rather substantial share-the-wealth plans are in process. All too often a wealth of individual teaching experience is either lost, mislaid, or inadvertently hoarded. A number of card files are being developed. These files will contain lists of extraclass projects, including objectives and evaluation techniques; illustrative teaching approaches for the various course topics; and they will contain illustrations that relate the over-all material to the students' experience. Expansion of resources of these types can continue profitably indefinitely if two caveats are kept in mind. They are that resource materials are valuable as stimulations but not as prescriptions, and that sustained effort must be made to see that the files are of the circulatory rather than the storage variety.

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[2] John H. Morris, *Critical Thinking Gains and Achievement in a Social Science Course,* Unpublished Ph.D. dissertation, Library, Syracuse University, 1952, p. 110.

Lastly there is an unlimited area of research that remains before those who are concerned with citizenship education. To give but a single example: Is it true, as many believe, that in the face of continuing emergencies great numbers of students have given way to passivity and cynicism? If this be so, how can we best help students in understanding that while it is true that "there is no resting place down here," at the same time democratic experience may be magnificently rewarding? Further research may be needed to effectively invite students to desert a negative attitude, and to encourage them to contribute their little toward the ideal expressed by a recent candidate for high office, ". . . a firm confidence in justice, freedom, and peace on earth that will raise the hearts and hopes of mankind for that distant day when no one rattles a saber and no one drags a chain."

Part Five

ADMINISTRATION AND EVALUATION

MALCOLM S. MACLEAN

CHAPTER XVII. *THE ROLE OF THE ADMINISTRATOR*

THE role of the administrator in helping his teachers to find and make use of effective techniques for General Education is vital. My concept of its importance has grown as I have helped to build programs in higher education in America, at Minnesota, Wisconsin, and Hampton Institute, consulting with scores of institutions and observing many more as they wrestled with the problem of developing syntheses out of fragments, integrations out of diversities. In this struggle, successful operations depended in large measure upon what the administrators did to help their teachers with methods and instruments, and failures stemmed in part from what executives did not do. In what follows I shall summarize in composite form what appear to me to be best administrative practices.

PROVIDING INTERCOMMUNICATION

The majority of teachers are not adventurers. In general they find peace and security in established routine, in easy conformity, in not getting too far out of line. This is suggested by the saying that "we tend to teach as we were taught," to use old and tried tools, techniques, methods. When, therefore, educational and societal pressures force a revolutionary change such as the powerful movement for General Education, the pioneers and the experimenters move out ahead. If they are to succeed in their venture, their administrators must provide them with every possible means of intercommunication so that they may work as a combat team. Only so can they learn from one another the fundamental purposes of what they are attempting to do. Only so can they master the strategy and tactics, the methods and the instruments by which they can establish themselves against the attacks, the criticism, and the carping of the defenders of the *status quo*. And only so can they feel the security of mutual support.

Administratively this togetherness can be managed in several ways:

1. Frequent staff meetings may be arranged, with carefully planned but not rigid agenda which include discussion of tools and techniques, as often as possible demonstrated, sometimes by means of socio-drama or role playing. On campus these will include not only the familiar scheduled meetings at established intervals. Frequently, at Minnesota, an instructor who was trying out a new gadget, a different method of using films or slides, an experimental technique in lecture or discussion, invited both administrators and other teachers in to watch, analyze, and criticize, and followed this with a clinical session.

Again, on campus, the administration at Stephens College has for years held a fall conference. The staff returns a few days or a week early to analyze the progress of the past year and delineate the plans for the coming one. Of great merit as supplements to the on-campus sessions are those held for two or three days away from college in some delightful spot. Thus San Francisco State College for each of five years has held three-day meetings among the great pines on the seashore at Asilomar. Fresno State College faculty get together at Yosemite. In the old days, our General College staff fished, cooked, chopped wood, and discussed tools and techniques of General Education on an island in Minnesota. The informal atmosphere of these gatherings, the mixture of work and play, not only builds morale and confidence bred of intimacy, but illuminates brightly much of the *how* of the process in classrooms thereafter.

2. Space, funds, and process for a staff library may be provided. With a few hours a week of technical assistance from a member of the central library staff, this unit readily becomes a central source of stimulus and information. By reading widely in the field, teachers gradually acquire a sense of historical perspective, of the dynamics of General Education, a feeling of belonging to an ongoing, success-

ful, and powerful movement, and illumination on how other teachers in other institutions are devising new tools and techniques or adapting old ones in new ways to the problem of synthesis. This too builds morale and efficiency.

3. It may be made possible for instructors who are puzzling over how to use best the lecture-demonstration method in science, role playing, phonograph disks and earphones in language teaching, or the physical setup of a writing laboratory, to visit other colleges where these kinds of materials and processes have long been established. An administrator will often find, as I have, that standing the costs of even extended trips for his teachers pays large dividends. They return home with a new confidence, not only because they have learned new tricks of the trade, but because they sometimes find that they have been handling their work more effectively in some ways than have the instructors at a more publicized institution. Further, they usually strike up professional association with other workers that leads to continuing correspondence and occasional visits together. Of course, whenever possible, the alert administrator will stimulate and support requests for grants from foundations for fellowships for his teachers to enable them to take a half year to a year of travel and study the methods, devices, processes, and instruments employed in their various fields by others. A further means of bringing about this essential cross-fertilization, and one that I am certain will be more frequently used, is arranging exchanges of instructors with other colleges for a summer session, a semester, or a year. Thus, if I became interested in the case study method as a possible effective process for teaching in a number of fields, I would make every effort to arrange an exchange with Harvard for a period so that one of my people could learn the method thoroughly there, and the Harvard man could give instruction to my staff at home. I would do the same with Stephens College for humanities and family life, with San Francisco State for general social sciences, and with Minnesota for art and writing laboratories and the counseling program. Many more possibilities than these few will suggest themselves to the watchful administrator and his staff. In addition, it is necessary only to mention the familiar device of bringing in known effective workers from other colleges as consultants on tools and techniques and their effective use.

PROVIDING PHYSICAL FACILITIES AND TOOLS FOR TEACHING AND LEARNING

Development of a variety of working spaces designed for maximum effectiveness in teaching and learning in General Education; equipping these classrooms, studios, stages, and laboratories with efficient tools; training teachers to make best use of them; employing skilled technicians to service them and keep them in repair; and evolving a process to accomplish these things with a minimum of friction and breakdown requires much careful administrative thought and the making of many decisions. It demands the cooperative effort of many specialists: the president, deans, comptroller, architect, superintendent of buildings, artists, engineers, technicians, and the faculty who are to do the teaching. It involves masterly budgeting, for in most institutions, General Education is in competition with traditional and established departments for college funds. Moreover, this field has all too often been looked upon as a cheap way to educate masses of students, chiefly by means of large lecture courses used to screen out future specialists on whom most of the money and stafftime will be spent. Therefore, if such a policy prevails, the building of a new cyclotron or an additional wing on the rat laboratories will give short shrift budgetwise to General Education. If, however, the policy be to support and develop the field, the administrator must consider tools and techniques.

1. Working space is important not only for efficiency of the teaching and learning process but for the atmosphere it creates. Therefore, team planning of the makeover of old rooms or the building of new ones is essential. In the General College at Minnesota, we had the exciting task of taking a portion of the then ancient and abandoned College of Dentistry and making it into a functional housing for General Education. This involved a vast deal of technical, esthetic, and educational planning. We had to work out rewiring so that students on dark days might have 25 lumens at the reading surface of their texts or notebooks instead of the eye-straining 6 lumens we found. We had to run wires from each classroom, laboratory, and studio to a central room in the basement so that lectures, discussions, interviews could be picked up at any time, recorded, and played back. We called in an accoustical engineer who, by means of sound-absorbing materials, turned irritatingly noisy and reechoing rooms

into areas where whispers could be heard. Our artists chose soft and attractive colors for walls and ceilings and supervised their application. Specialists worked with us on the problem of blackout so that movies and slides could be shown. Librarians helped us to design and place bookcases and periodical racks so that materials might be ready at hand and worn out in use. The purchasing agent searched catalogs with us for months to find the right furniture, and where none that suited was available, the staff designed its own and had it built in the shops. Every function of General Education, as we then understood it, was considered. In consequence each room presented different problems: the art laboratories were quite different from those for writing, for science demonstrations, or for listening to music, and each of these was different from the small discussion rooms and the large lecture halls, or the centralized audio-visual setup with its film, slide, and projector storage and its preview room.

In this process, the administrator has a number of tasks. He must provide budget as nearly adequate as possible to do the job either in its entirety, or by stages with a predetermined priority. He must see to it that planning and execution are effected by proper teamwork, and that the latter is supervised so that things are done right. He must arrange for people with know-how to give consultant services so that they may instruct the faculty on what can and what cannot be done with money and materials available.

2. Selection, purchase, placement and use of audio-visual equipment and supplies are another process that needs close administrative attention. Without it, money, time and effort can be lavishly wasted. I have seen a thousand dollar projector, bought by an enthusiastic staff member or one high-pressured by a salesman, used twice, and stored away to gather dust in an attic. I have seen departments, housed next door to one another, buy identical costly radios or motion picture machines, each of which was used no more than a half dozen times a year. Sometimes these machines have been replaced with new ones or let to lie idle, simply because they were handled by amateurs with no knowledge of simple repairs. On nearly every campus also are to be found duplicate sets of slides, films, maps, and other materials. With the development of television, which bids fair to become one of the most effective of teaching instruments for General Education, the administrative problems in-

volved are becoming more acute. Such questions arise as these: Shall equipment be centralized, stored in one location, serviced and repaired there, and distributed to the classrooms on call? If so what is the most efficient mode of scheduling? Ought these materials and tools to be handled, like books, by the library? Shall administration provide projectionists or arrange to have the staff taught to do their own? If projectionists are to be provided, should they be students, trained or in training, or professionals? What sort of supervision should they have? If professionals, what problems and issues will their union raise as to wages and hours? What sort of arrangements should be made for replacement of worn-out or obsolescent tools? What sort of budgeting should be done, and to whom should budget allotments be assigned? These questions only administration can answer. Upon the answers will depend in large measure the efficiency with which the staff will use its tools and techniques of General Education.

3. The problem of library service for students and staff in General Education is complex. No matter what sort of a program is being developed—rationalist, neohumanist, or instrumentalist, or any blend of these—books and periodicals still constitute the basic materials of instruction. But in driving toward synthesis of any sort, these materials do not fall into the neat and tidy categories of the subject-matter disciplines in the specialties. For a single course, a teacher may need both current and ancient stuffs from fifteen or twenty different fields. He may require a fragment here from Plotinus, along with a recent bit from Vannevar Bush or from Einstein and a page or two from the *Congressional Record*. Out of these varicolored threads of man's thought, feeling, and action the master teacher weaves his course pattern. In consequence the whole operation of library services needs to be rethought by administrator, teachers, and librarians. The problem of centralization or distribution again rises here as with audio-visual materials, as does that of duplication. Again team planning and administrative decision are essential.

PROVIDING DIAGNOSTIC TESTING AND COUNSELING

If teachers are to invent, adopt, and use tools and techniques for effective general education, it is essential that their administrators furnish them with the best possible diagnostic and counseling services. This means employment of skilled personnel at the top level of psychological competence, psychometrists, and adequate clerical and statistical workers. Administration must provide space, time, and budget for these activities.

The reasons for this are clear. They stem from the fundamental and never too often repeated concept that we cannot know what to teach, how to teach, or when to teach until we know thoroughly whom we are teaching. Thus we must have diagnostic testing:

1. To learn the range and level of academic ability of the students in the program of General Education. I have seen students in a public junior college, students who ran the whole gamut of tested scholastic competence, floundering and bewildered in general courses adopted whole-hog from the University of Chicago where the students lie almost entirely in the top decile on tests such as the American Council Psychological and the Sophomore Culture, as well as reading speed and comprehension.

2. To learn to what extent students already possess the knowledges and skills, the attitudes and values we hope they will gain from our courses;

3. To determine by what tools and techniques the students, individually and in the mass, learn most effectively. Is it true for all of them, for example, that "a picture (perhaps a motion picture) is worth ten thousand words?" What sorts of materials do they read with the best comprehension? How acute and accurate are their powers of listening to lectures and discussions?

4. To identify the directions and intensities of their interests so that we may determine in what areas of General Education we may expect to find them most zestfully motivated, and in what areas we may find the going rough if we are to stimulate them to learn little or at all.

5. To find out, if we can, to what degree the students have the power to see wholes instead of parts, to tackle unfamiliar problems and walk all around them, to comprehend interrelations and interactions. While testing and counseling have not yet developed their methods to the point where they can give us all the answers and with fine discrimination, they can nevertheless give us far more and better ones than any teacher can find for himself. When testing and

counseling services are well organized and manned, their personnel become an important part of the General Education team. They not only feed the teaching staff important information upon which the teaching and the use of the tools and techniques can be made more effective, but they also pick up in their counseling a continuous flow of student evaluation of the program, the teachers, and the methods used.

PROVIDING RESEARCH AND EVALUATION

No administrator should support the launching of a General Education program without setting up at once the ways and means of carrying on continuous research in the meaning and process of General Education, in the effectiveness of specific tools and techniques employed by his staff, and in evaluating the outcomes of the whole effort and of each part of it. Thus, for example, at Stephens the late Dr. W. W. Charters directed research on every aspect of the program there for a period of more than twenty-five years. At Minnesota the General College made continuous and effective use of: The University Committee on Educational Research to help the staff devise its course and comprehensive examinations; the Testing Bureau; the Health Service; the various speech and reading laboratories; as well as many master and doctoral candidates from various departments who were interested in investigating one or another aspect of our problems, or in refining or developing instruments to find out what we were getting for what we tried to do. Quite a lot of these research activities bore directly upon the values and effectiveness of our tools and our methods. For example, item analysis of our examinations, involving over a million analyses, showed the staff the difference between valid and invalid questions and gave them a growing confidence in the use of these measures and in the effect of their teaching. Experiments were designed to test the methods used in writing laboratory, others to find out whether propaganda-slanted movies swayed a class toward or away from a particular concept in the social sciences, and others still to check the efficiency of sound recordings and motion pictures in improving the speech habits of our students. There is no end to the opportunities for research projects opened up by a developing program of General Education and by the necessity for evaluating it. Without such research and evaluation, we are forced to fall back upon the old and outworn notion that higher education is merely a matter of casting our bread upon the waters. In my view no modern administrator can for a moment be satisfied with this notion. He will instead provide the funds, the personnel, the equipment, and supplies, as well as some of the ideas for progressive assessment.

PROVIDING RECOGNITION FOR ACCOMPLISHMENT

General Education in its modern dress has had, and is in many quarters still having, rough going, as is the lot of most new ventures in academia. It shares the same sort of growth pains that the sciences suffered from in the late nineteenth century and that engineering, agriculture, home economics, and professional education have had in our time. Entrenched academic and professional departments have eyed it as an intruder from the beginning. They have criticized and caviled at it. Many of them have been unwilling to release their teachers for even part-time to work in it, and some have tried to unload their least competent people to undertake this most difficult task. The established professors of English literature, political science, mathematics, and standard philosophy, serving on promotion, appointment, or budget committees, do what they can to discount the work of teachers in General Education. They recommend few, if any, promotions for those who teach survey courses, those who do a shining job of discovering how to use television, a battery of microscopes, a sound recorder, a movie, a socio-drama, or a classroom library, to light up the minds and emotions of students. They demand for promotion and increase in salary instead, a half dozen titles in a learned journal or a footnote to learning theory, or a patient item or two on Keats' failure to propose to Fanny Browne because he was suffering from a miserable head cold before the age of Kleenex. Or perhaps, they ask for one more minute addition to the subconstructs of the construct that has given us atomic fission and fusion, not aware that the release of student powers through General Education may be, in the flow of centuries, a more powerful force for the peace, security, and happiness of mankind than all the unshackled energies of the atom.

In the face of this conservative and protective behavior, it is the job of the administrator to see to it that his teachers in General

Education get a break. He must so plan that these people get their advancement in rank and salary, their annuity and retirement insurances, their sabbatical leaves, their appointment to faculty policy and operations committees in the same way and to the same degree that those who teach history, sociology, or chemistry get theirs. He must reward one who discovers a better way to use one of the tools or techniques of General Education as much as one who finds out how to frustrate a rat, or what Anthony really said to Cleopatra, or whether Shakespeare left his second best bed to Anne Hathaway.

If the administrator can steel himself to maintain these balances, can budget his own time and the institution's money to give adequate support to General Education, and can follow at least most of the lines of operation suggested here, he may develop an adequate program of General Education.

PAUL L. DRESSEL AND
LEWIS B. MAYHEW

CHAPTER XVIII. *EVALUATION AS AN AID TO INSTRUCTION*

PURPOSES OF EVALUATION

EVALUATION is the process of placing a value on an educational experience. It is not distinct from instruction, for instruction which does not involve an appraisal of the effectiveness of the learning process is itself incomplete. However, a concept of evaluation which regards it as only a stage—perhaps the final one—in instruction is also incomplete. In addition to appraising the effectiveness of a program, instruction includes the selection and organization of content materials and learning experiences in such a way as to foster in students previously agreed upon changes in behavior. Evaluation activity can contribute heavily to these other responsibilities of the instruction. The nature of these contributions may be seen by examining three major purposes of evaluation:

1. Investigation of program effectiveness
2. Improvement of the educational program
3. The motivation of students

It is at once apparent that evaluation is a much broader and more intensive process than testing and grading.

Investigation of Program Effectiveness

The first of these three strongly interrelated purposes involves clarification of objectives as an initial step. The stating of objectives in operational terms, in terms of the kind of behavior desired of students and the type of situation in which that behavior is desired, is necessary in order to permit development of evaluation procedures. It also becomes necessary to specify the facts, concepts, principles, attitudes, beliefs, skills which the student is expected to use or demonstrate in the situation. Finally, it is necessary to specify the ways in which the student should organize his knowledge and skills in dealing with the situation. These steps may be illustrated by considering the science objective: *the student should increase in ability to read and analyze critically current (popular and semi-popular) scientific articles.* The task specified seems reasonably clear until one begins to consider it in terms of the evaluative task. Then it becomes apparent that the phrase "read and analyze critically" requires considerable elucidation. The following elements (among others) might be included:

1. Ability to recognize assumptions made by the author
2. Ability to recognize factual errors
3. Ability to apply scientific principles in judging the validity of conclusions
4. Ability to detect the presence or absence of a scientific attitude on the part of the author or experimenter.

While this list might be expanded, these four show that attention must be given to the kind of facts and principles the student knows, to the nature of assumptions and an ability to recognize them, and to the qualities associated with the scientific attitude. The import of these decisions in clarification of objectives and in determination of content is clear. Furthermore, attention must be given to the kind of articles the student may be expected to read and the kind of organization of his resources the student must make in order to deal with them. This again has implications regarding the organization of materials and ideas for classroom instruction.

Improvement of a Program

Development of a curriculum involves formulation of objectives, selection of content, concepts, and principles, the selection of instructional techniques for organizing and presenting to students in such a way as to facilitate their development, and finally evaluation of the effectiveness. Evaluation, as we have seen, helps to clarify objectives. By providing evidence on the backgrounds of students and by indicating the relative significance of various content materials in dealing with problems, evaluative activity assists in the selection of the content and ideas for instruction. Finally, evaluation applied in relation to a research program can give some idea of the relative significance of a variety of possible instructional techniques.

The preceding contributions are the most obvious and theoretically the most valuable ones, but in practice they are frequently superseded by other values. Evaluation activity is perhaps the most significant kind of an in-service learning experience for teachers. The kinds of tasks which are developed to reveal the progress which students make in regard to objectives frequently suggest—if, indeed, they are not identical with—the kinds of tasks which provide suitable learning experiences. Thus a group of science instructors working in the Cooperative Study of Evaluation in General Education found that their analysis of the objective improvement in ability to read current scientific articles and their study of such articles suggested both materials and techniques of instruction appropriate to the objective.

Evaluation activity leads to program improvement by encouraging individualization of instruction. Awareness of student differences is cultivated by evaluation, with the result that diagnosis and attention to specific learning difficulties become matters of concern.

The coordination of instructional efforts is greatly aided by evaluation. The demands of such activity require both achieving a consensus as to desired results, and cooperation in developing instruments and interpretation of results.

Finally, evaluation encourages program improvement through providing supervisors or administrators with the information necessary for wise decisions and through providing the kind of data which can be used to improve public relations.

Motivation of Students

Although student motivation as a purpose of evaluation might be regarded as a phase of program improvement, it is sufficiently significant to call for separate consideration. Motivation has three major functions in the learning process:

1. To promote activity in the desired areas or in respect to the desired outcomes

2. To generate interest or enthusiasm resulting in increased effort
3. To encourage the learning and retention of certain desirable habit patterns or responses and the elimination of other undesirable ones

The role of evaluation is significant relative to each of these. Frequent testing places pressure on the individual to keep up with his work. Evidence of progress provided through evaluation and understanding and acceptance of the outcomes evaluated can generate considerable interest and increase the effort of students. Opportunity to correct their own tests, to discuss and correct errors is a significant aid to the learning of the right responses.

IMPORTANCE OF EVALUATION IN GENERAL EDUCATION

General Education as a recent manifestation of a recurring revolt against traditional practice is commonly regarded as being under the necessity of proving itself. In this sense, evaluation appears to be a necessity if General Education is to advance. On the other hand, General Education has so many forms that an attempt to evaluate General Education is meaningless. Furthermore, there is considerable doubt that the mind which accepts traditional practice without other evaluation than its persistence would be much affected by any evidence which could be produced as to the superiority of General Education.

Few will quarrel with the desirability of such aims as critical thinking, personal adjustment, aesthetic appreciation, good citizenship, and the like, in so far as they are regarded as qualities desirable in individuals who are to obtain optimum satisfaction and make optimum contribution in a democratic society. If it can be demonstrated that education can do more than it has done in the past to develop these qualities, there should be no hesitancy in breaking with tradition. If, in breaking with tradition, an authoritarian, prescriptive approach is avoided in favor of an experimentalist one, the role of evaluation becomes primarily that of assessing the significance of change and of suggesting additional changes aimed at further improvement.

Since the heart of any education program is instruction—interpreted in its broadest sense—the most significant contribution of evaluation must be improvement of instruction. Evaluation and the evaluative frame of mind suggest many techniques and materials which can be used to enrich the educational experience of each student.

EVALUATION TECHNIQUES APPLIED TO TEACHING

The measurement aspects of evaluation have been given thorough treatment in many works. The instructional possibilities of evaluation have been discussed to a considerably lesser extent. The following sections are devoted to this teaching aspect.

Peer Reactions

Much of the work demanded of students in connection with their academic studies has about it a flavor of artificiality. In part this may be true because assignments for written and oral communications are made in terms of the teacher's interests and logic rather than in terms of those of students. In addition, the actual responses made by students frequently are artificial for the reason that the students are writing or speaking to impress teachers rather than to communicate ideas to peers. One way of reducing this artificiality lies in encouraging students to rate each other's work, not in addition to ratings made by teachers but in lieu of them.

Obviously, asking students to judge the work of their peers requires careful preparation, for if students are presented with responses given to some such vague question as "Tell all you know about the French Revolution," the results would be disastrous. Not only must questions be carefully prepared so as to indicate precisely what is desired, but the teacher and students must develop criteria to be used in judging the responses. If, for example, a teacher plans to assign several written exercises to a class, the first of the series might be treated as a training device. All the papers of this first group would be read by the teacher and several examples given detailed criticism in the form of legible, intelligible, marginal comments. All papers except these few would be returned to the students. Following a short discussion of the assignment and what might be expected of a paper submitted in response to it, one example could be shown on a screen by means of an opaque projector. Then, item by item, the example together with the marginal comments could be analyzed.

After students have completed the second assignment, the teacher might conduct a short discussion of the criteria to be used in rating it and then distribute to the class the unread papers with instructions to take them home, read them, and return them at the next period. At that time the opaque projector could again be called into play and a discussion of several themes and their ratings carried on. By the end of this activity the members of the class can be expected to have acquired some skill in rating each other's work as well as a much greater appreciation of the problems and the values of effective communication. Subsequent written assignments may then be turned over to students for evaluation, provided the class is instructed each time as to what it is to look for in the assignment. Of course, the teacher should make periodic checks on the work done by the students, but such checks would consume only the time normally devoted to rating the entire written output of the class for the term. By using the students themselves as raters the amount of written work demanded of the class can be increased with all the educational values incident to written work. In addition, a whole series of concomitant values derived from thoughtfuly rating the work of others, such as a review of learned materials or making analysis and synthesis of materials in order to evaluate work effectively, will accrue.

The rationale upon which student rating of written work is based can be adapted to oral communication. Ideally such an adaptation would be facilitated by the use of sound motion pictures of students making oral communications about the subject involved. Using this device, a single example could be shown several times as critical criteria were built up which could be applied to "live" speeches or recitations. The expense of this is so great, however, that except in the rare cases where there exists a commercial film, a substitute method must be found. Most classes will be forced to develop criteria for rating speeches in the abstract, since to subject the work of a class member to the searching criticism needed for this purpose might well destroy more values than it achieved. Even working in the abstract, however, many concrete illustrations might be brought out, for the criteria will be developed with respect to a specific class assignment or speech topic.

Once criteria for rating have been specified, students may be asked to judge a variety of oral communications of their fellows.

Where all students are using the same criteria in evaluating each member of the class, the resultant index of effectiveness of each speech has been found to be at least as reliable as if the teacher alone had assigned a grade. In addition, the teacher is freed from a laborious job in order to concentrate on aiding students to express themselves more effectively about the subject. Even more important, however, are the educational values for students. Being required to be critical of the oral communications of others may be expected to have its effect on the student's own speech and to make him conscious that the act of communication cannot be separated from the audience reaction.

In the situation just described, the criteria or rating scales were developed somewhat informally by the entire class. In some instances it may be desirable to use a more elaborate technique in obtaining rating devices which will be meaningful to students. There are, of course, a number of such scales already available, or others can be quickly prepared by teachers. They must, however, by their nature, be phrased in abstractions which are too frequently far removed from the experiences of college students. During World War II, Dr. John C. Flanagan and his associates, working for the Air Force, developed a method of constructing rating scales which they called the critical incident technique.[1] This technique consisted of soliciting, from a great number of people, examples of specific behavior which made for effective or ineffective performance. Flanagan asked fighter pilots each to name one incident of pilot behavior which they had observed during the past week, which made a specific fighter performance effective or ineffective. Collection of a large number of these incidents provided the basis for an instrument which was expressed in behavioral terms, understandable to pilots.

This technique has applicability in classroom evaluation. Students may be asked, in judging themes of their peers, to record specific elements which made a paper an effective or an ineffective one. Collection of these notes over a period of several terms or semesters would provide a basis for building a rating procedure which would be meaningful to students.

There are many other ways in which evaluative techniques applied by peers can be fruitful in the form of increased learning. Asking students to judge each other's blackboard performance, laboratory skill, facility in group participation, or ability to present oral reports all are techniques based upon the same principles of learning:

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[1] John C. Flanagan, *The Development of a Procedure for Evaluating Officers in the United States Air Forces,* American Institute for Research, Pittsburgh, 1947.

1. Motivation on the part of the performing students is increased as the realism of the problem is heightened by requiring that the communication or performance be addressed to their peers.
2. Synthesis and integration of the material by students who rate the performance is facilitated. In order to evaluate, the student quickly needs to reproduce for himself the entire evaluation process, i.e., understanding the objectives or assignment in behavioral terms, determining what things students must do or say in order to comply with the assignment and making a value judgment as to the relative worth of the performance.
3. Retention of the material by both the performer and the rater is increased. The student evaluating the work is required to restudy the learning material in order to do an adequate job of rating. The student doing the work in the first place is able to know quickly, and in terms meaningful to him, how well he has succeeded or failed in communicating with his peers. This in turn forces a critical self-appraisal.

Analyzed Models

A number of evaluative techniques have been developed which are adaptable to use in training students to judge work of their peers but which are equally appropriate for other kinds of instructional purposes. The Cooperative Study of Evaluation in General Education of the American Council on Education has prepared a *Handbook of Theme Analysis*. This handbook consists of a chapter dealing with the rationale of the process of judging themes, followed by a series of examples of students' written work. Each example is presented with an introduction outlining the assignment for which the paper was written and a detailed analysis of the strengths and weaknesses of the example. For the majority of examples, no final evaluation of the general worth of the paper is made, but the last section of the book is devoted to showing how the transition from analysis to evaluation or judgment may be made. The book was begun in an effort to provide a means for the in-service training of communications teachers. However, as the book was used it was found to have value as a teaching device and as a technique equally valid for the in-service training of teachers in other General Education courses. As a teaching device, pages of the book were shown to students either by giving them the book itself or by projecting pages on a screen. Students seeing work of students of their own level (but not from their own class), juxtaposed with detailed critical comments, were able to set up criteria for the improvement of their own work or for evaluation of the work of their peers. Incidentally, by showing anonymous papers, the discussion of their worth could be more searching than if papers of class members were used. As a device for the in-service training of staff members the book provided a good means for the stimulation of several hours' discussion of the process of judging themes (a process which at least one institution found to be little understood by younger staff members).

The success of the *Theme Analysis Handbook* led to attempts to provide a similar device involving speeches. A film was prepared consisting of five student speeches given under actual classroom conditions. Transcriptions of the speeches were made, and a committee of communications teachers prepared detailed analyses of each. It was planned to release a copy of the film to be shown to staff members followed by a study of the analyses of the speeches. By being able to refer back to the way the speech was actually given, it was hoped that valuable discussion of means for judging speeches could be developed. Although technical difficulties with the sound film prevented completion of the device, the teachers working with the project gained enough insight to become convinced that such a film and handbook had possibilities as a teaching or as an evaluation device.

Of the same general order as the presentation of carefully analyzed examples of students' work is the case study method which, however, differs from other examples given here by having been conceived originally as a technique of teaching rather than of evaluation. In General Education courses this technique has been used effectively in science courses at Harvard College[2] and in a course dealing with human relations at Colgate University. This course in general was conducted by presenting students various problems in human relations and asking them to arrive at solutions on the basis of their reading in the area. The teachers commonly experienced a decline in student morale in about the third or fourth week of the course. No "correct answers" were ever given, and the students complained of a deep sense of frustration at not being told the "answers." In an effort to alleviate this drop in morale an evaluation device was employed. The course itself was presented to the students as a problem in human relations. In the analysis which followed, a number of weaknesses in the course were revealed to the faculty, but the students were enabled to examine and come to understand the objectives of the entire case-study approach.[3]

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[2] James B. Conant (ed.), *Harvard Case Histories in Experimental Sciences*, Harvard University Press, Cambridge, 1950. There are at present six in the series but more are being developed.

A modification of the case-study method has been used successfully as an examination device in the field of the natural sciences. A fairly long description of some historically important experiment is presented. After the beginning phases of the description have been read the students are presented questions designed to test their ability to understand the experiment thus far and to extrapolate from the facts presented. More of the same experiment is described and more questions asked until the student is led to the final solution arrived at by the original experimenter. Students are then asked to render a judgment as to the soundness of the conclusions. As a teaching device this technique has perhaps even more to commend it than as a testing device. The student is forced, periodically, to make some decisions. As the experiment unfolds he is able to test the soundness of those earlier solutions, and if necessary, to revise his judgment. Selection of adequate materials for this kind of exercise and preparation of appropriate questions is no easy task. To show how this work can be done and to provide interested teachers with appropriate reading materials the Cooperative Study of Evaluation in General Education has developed a handbook. It contains suggestions as to how to prepare questions and exercises designed to get at certain major objectives of courses in the natural sciences, some worked-out examples carefully integrated with a printed objective test, and a number of readings varying in length from a paragraph to two or three pages.

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[3] G. F. Castore and Kenneth Berrien, "Student Evaluation of a Case Method Course," *Am. Psychologist,* vol. 5, pp. 149-51 (May 1950).

Paper-and-Pencil Achievement Tests

The most commonly used of all evaluation devices are those which might be characterized as paper-and-pencil achievement tests. Further, the generalization may be made that most of these tests are prepared and administered by classroom teachers. In view of this popularity and in view of the intimacy between such testing and the classroom life of students it may be well to outline briefly the major types of achievement test techniques and to show how they can be adapted to contribute to the teaching process.

Although short-answer tests (frequently called *objective*) are being adopted more and more frequently by college teachers, the workhorse of college testing is still the written or essay question. This type of test item may be defined as one "which requires a response composed by the examinee, usually in the form of one or more sentences, of a nature that no single response or pattern of responses can be listed as correct, and the accuracy and quality of which can be judged subjectively only by one skilled or informed in the subject."[4] Essay tests, apart from whatever measurement uses they may have, possess several unique values important in education.

1. Students to be tested by essay questions seem to make a somewhat different preparation than they do if they know a test is to be of the short-answer variety.[5] Students in making this different preparation seem to seek the larger significance of learned materials. They attempt to generalize and integrate in place of attending to specific details.

2. Students given essay tests must express themselves in writing. Although the results may not be scored with the nicety or precision of an objective test, the experience of writing, subject to the scrutiny of others, represents a desirable educational activity. In this connection the effectiveness of student responses and the objectivity with which they are evaluated can both be increased if the questions indicate explicitly what is desired. Frequent use of essay materials for this reason is especially pertinent to counteract the effects of increasing reliance on machine-scored tests for more purely measurement purposes.

3. Essay questions provide the possibility for students to do creative work in making an analysis of a problem and in providing an answer

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[4] E. F. Lindquist (ed.), *Educational Measurement,* The American Council on Education, 1951, p. 495.

[5] H. R. Douglas and M. Tallmadge, "How University Students Prepare for New Types of Examinations," *School and Society,* vol. 29, pp. 318-320 (1934).

out of their own experience. Again, students' success or failure in achievement with respect to this perhaps cannot be measured effectively at the present time. Nonetheless, the behaviors involved are such that most teachers would rank them as desirable ones which should be encouraged.

These purposes are such that they can be achieved, but frequently are not, simply because the essay question is so easy to misuse in either its measurement or its teaching function. The Michigan State College Board of Examiners prepares objective term-end examinations for use in each of the four courses offered by the Basic College. An examiner's full-time assignment is to teach one four-hour section of a Basic College course and to prepare two 125-question term-end examinations during a twelve-week period. This gives some notion of the time required to make good objective-type tests. The generalization can be made that to use essay materials effectively, about the same amount of time should be spent in preparing and scoring a written test as would be spent in preparing and scoring an objective one. The essay technique, of course, requires more time on the scoring side, while the objective technique consumes time in the preparation phase.

In preparing essay materials for use either for measurement or for instruction, several criteria should be borne in mind which can make whatever questions are used more effective.

1. Recognizing that the performance of an individual is based in part on the task assigned, consideration should be given as to the topics or issues which are stimulating to most students and which at the same time offer opportunity for the fullest display of their abilities.
2. Accepting the fact that the performance of a task depends on understanding the task of be done, consideration should be given to some type of structuring through questions or suggestions which will make clearer the type of response desired.
3. Since a major difficulty in use of essay materials has been in obtaining agreement on the part of readers, each question should be carefully analyzed in advance and the major points in the expected response indicated. These points should not be specific conclusions, but should rather note the kinds of considerations which would seem to reveal the most thorough grasp of the issue or task presented. Such structuring for the purposes of judging need not be identical with the structuring suggested in 2, but probably would bear some close relationship to it.

As an illustration of the utility of these criteria a recent experiment in evaluation in the area of the humanities may be described. A committee composed of teachers of General Education courses in the humanities set about to develop a technique which would allow the student the greatest possible latitude in making his responses, while at the same time so structuring the method of scoring as to approximate the reliability obtained by an objective test. Four forms of the test were developed, one for each of the areas philosophy, music, literature, and painting. Each form presents to the students five or six searching questions which could be applied with equal relevancy to any example of the type of work involved. For example, the form dealing with philosophy asks the student to make notes about the subject of a philosophical passage, the purpose of the author, the means used in accomplishing his purpose, any evidence which identifies the work of a particular period or school, and the way in which the selection affects the student. The last question asks that the student write a critical evaluation of the selection basing his argument on the points noted under the preceding questions.

To accompany each of the four forms the committee prepared a list of specific abilities or behaviors which the student might be expected to demonstrate in his answers. Thus an ability which could be noted on the philosophy paper would be the ability to state the main idea of the selection clearly and accurately. A student's score thus would depend upon the number of such similar abilities he demonstrates and the degree of sophistication these represent.

Such a device is flexible enough so that any example of a painting, musical selection, or literary or philosophical work can be used as the object or problem. For example, students might be expected to make analyses of two or three paintings in class. The final test or measure of their growth would be to ask them to make the same kind of critical judgment with respect to a work they had never seen. This teaching specifically for the skill to apply principles learned in one context to a completely new situation is a major purpose of General Education, and this device can facilitate achieving that objective.

Further, the device structures the questions asked to such an extent that students can be reasonably sure what is expected of them. But in order that they not come to rely too much on someone else having structured a problem for them, the students can be led gradually to the point where they can analyze works of art without the aid of the six leading questions.

Much has been said in educational literature about the values of short-answer or objective test questions for measurement purposes. A test composed of such items can be scored cheaply and reliably by clerical help, or for that matter, by machine. A test composed of 150 short questions over a course of study is more likely to provide an effective sample of the material involved than a three- or four-question test. However, the learning experiences provided by such tests are frequently overlooked.

The fact that papers can be scored quickly and returned to students while their interest in the outcomes of the test is high can be developed as an aid to retention of learned material.[6] That objective questions are frequently so short that analyses of a number of them in class may be made provides a means for teaching for specific methods of problem solving or other educational objectives. That objective tests require a student to go on record with a solution provides a way by which he can be asked to defend his position and then be shown rather concretely the degree to which he has succeeded or failed. That short objective tests are able to sample broadly the material in a course makes it possible for the student to receive practice in solving a wide variety of problems.

Teachers have learned from experience a fact about testing which research is only now beginning to verify: that the testing situation is an ideal learning situation. The student is somewhat tense and shows considerable inclination to remember what he reads on an examination. Various methods have been suggested to capitalize on this phenomenon. The most elementary method, that of returning students' test papers to them soon after an examination and providing class time for discussion of the questions, has already been discussed. Of even greater value are techniques which enable the examinee to see his error as soon as he has made it, while at the same time leaving a record of mistakes made. Asking students to correct their own papers is one device, but if the test results are to be used also for purposes of grading, such a procedure may put unnecessary strain on the student's ethical standards, plus the fact that students find it easy to gloss over their own errors.

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[6] C. H. Smeltzer, *Experimental Evaluation of Certain Teaching Procedures in Educational Psychology*, unpublished thesis, Ohio State University, 1931.

A device has been developed which provides the educational values of allowing students to see their mistakes as soon as they are made, while preserving for the record an exact count of the number of bad answers the student made. It is a device made up of an answer sheet and key inserted in a punchboard. A student punches holes in the answer sheet corresponding to his answers to test questions. When he punches a correct answer, a bright red dot appears below the hole. When he punches an incorrect answer, the space below the hole is white. He is instructed to punch holes until he has obtained the correct answer to each question. His score is the sum of his punches. (As in golf, a low score is better than a high score.) This device, developed by George Angell and Maurice Troyer, and called the Self-Scorer, is available commercially through Science Research Associates.

Involving some of the same values as the self-scorer just described are a series of modifications of the standard, five-choice, multiple-response test question. The usual objective item is so written that one of the five responses is the correct one. By including an indefinite number of correct answers from none to five, students are required to make a closer analysis of the problem presented by the test question and to consider each response carefully. Research done at the University of Chicago[7] and at Michigan State College on how students respond to objective-type questions shows that one large category of better students read the problem contained in the stem of the item, formulate an answer, and then skim the responses until they find one which compares with their own solution. Inclusion of an indefinite number of responses makes somewhat different demands on the students.

Another technique which forces closer analysis of the testing problem requires the student to select as many responses as are necessary for him to be certain he has answered the item correctly. Frequently students, while not knowing the one best answer, can, by process of elimination, discard one, two, or three responses as being clearly incorrect. This kind of exercise places a premium on certainty of knowledge and facilitates growth with respect to reasoning by elimination. While more positive thought processes are frequently desirable, much of our everday problem-solving activity involves elimination of less desirable alternatives.

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[7] B. S. Bloom and L. J. Broder, *Problem Solving Processes of College Students*, University of Chicago Press, Chicago, 1950.

Inventories, Scales, and Check Lists

Of more recent concern in the area of educational evaluation is the use of techniques such as inventories, scales, check lists, opinionnaires, and the like. These devices had been used with success in psychology and sociology, although they were not generally accepted by teachers as a means of assessing legitimate outcomes of formal education. In part, the reluctance of teachers to use these evaluation devices may be attributable to an unwillingness to accept nonintellectual outcomes as objectives, for it is with these nonintellectual outcomes that inventories, scales, and the like are primarily concerned.

As long as the measurement of attitudes, the assessment of values, and the appraisal of beliefs of individuals required lengthy clinical study or elaborate testing devices, these objectives could not become part of the evaluative concern of classroom teachers. But when simple, easily administered and interpreted devices began to become available, teachers attempted to use them in classrooms. Through their use, these teachers frequently became concerned about what they were doing to affect these traits.

The teaching uses of measures of attitudes, values, and the like stem for the most part from the motivational effects of the test situations. A situation such as the following, touching as it does affairs of concern to students, can be used to lead into important class discussion.

> Frequently members of certain minority groups are denied the use of hotels and summer resorts. Owners who make the restrictions justify themselves by claiming economic necessity. They argue that if they allowed Jews, or Negroes, or Catholics, or some other group to register, then gentiles, or whites, or Protestants would refuse to patronize the hotel or resort. They claim that since there are more of the latter group than of the former, the success of their establishment depends on them.
>
> If the argument used by such owners were substantially correct (although

its truth has actually never been demonstrated), how would you react if you were the owner of a summer resort?

244. Prevent members of minority groups from patronizing my resort.
245. Allow all people to use my resort, regardless of their race, creed, color, or religion.
246. Gradually attempt to relax the restrictions without harming the financial strength of my business.

However, the actual scores on attitudes tests made by a class could be used for a similar purpose. For example, a class might be given a test measuring its attitudes toward war and reveal a generally favorable point of view toward the attitude object. The interpretation of why this is so could involve the entire class and have recourse to all subjects making up a General Education program.

A course formerly taught in the Basic College of Michigan State College, called Effective Living, based an entire teaching unit upon student use of a scale called *A Study of Values* by Gordon W. Allport and Philip E. Vernon.[8] Students first took the inventory which revealed which of six values each student regarded as highest. This led to a discussion of personality types and the implications such types had for society. Throughout the discussion, however, each individual student maintained his own score as an orienting factor.

This section would be incomplete without mentioning that teachers have at their fingertips the raw materials out of which all attitudes, values, opinions, personality, and interest inventories are built. From students' themes, written work, oral expressions, and even achievement on objective tests, teachers can infer a great deal about their attitudes, beliefs, interests, and aspirations. Once the teacher is in possession of this kind of knowledge, ways are open for modifying a course to fit those emotions. For example, from a first paper, a teacher detects that many students are hostile toward courses in the humanities. If they are hostile, it can be assumed that they will reject whatever values the humanities teacher is trying to develop. Thus it appears that the first task which faces the teacher is that of reducing class hostility. Similarly, it might be found from administration of a personality test that a number of the class might be described as having rigid, authoritarian personality structures. These people would be inclined to resent and even to reject certain methods of teaching. Thus in order to affect their behavior, techniques suited for that type of personality need to be found. In addition to providing the teacher with this information, generalized discussions of the results of a personality test by the teacher may help underscore for students the importance of individual differences.

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[8] Houghton Mifflin Company, 1931.

Audio-Visual Aids

The point of view which has been expressed thus far is that evaluation techniques have educational value beyond that to be found in their purely measurement functions. If this point of view is accepted, the role audio-visual aids might play in their utilization should be obvious. In addition to the obvious values of motivation, visual aids furnish a method by which students can be guided step by step through intricate analyses without the loss of attention which characterizes other techniques. This point can perhaps be illustrated by comparing two methods of showing a picture of Chartres Cathedral. Passing a picture of this building around the class serves to distract the attention of the one or two immediate viewers from whatever the rest of the class is doing. Showing the same picture on a screen by means of a slide or opaque projector focuses the attention of all on the picture at the same time.

Since World War II, technical developments in the area of audio-visual aids have resulted in a series of devices having greater and greater utility for the classroom teacher. The opaque projector, for example, for a long time posed a major problem for teachers because the heat from the illuminating system was so great as to preclude uses of many kinds of materials. Single pages could not be used, for example, because the air currents set up by the cooling system kept disturbing the paper. Newer models of opaque projectors have overcome this difficulty.

Another device involving projecting of materials on a screen is called a Vu-Graph. The Vu-Graph is simply a transparent plate on which can be typed or drawn any of a variety of data. This can be shown on a screen as could earlier slide devices. The Vu-Graph, however, has the advantage of being an inexpensive, letter-sized transparency which can be used in that form, eliminating the necessity for the expensive process of reduction of photographed materials to the size of a standard slide. A modification of this system may be made by creating an initial transparency containing, for example, a chart. Attached to one edge of this transparency would be a second sheet containing some additional data to be shown on the chart. Third, fourth, and fifth transparencies containing still further information can also be attached.

Perhaps the best known and most utilized audio-visual aid is the motion picture film. Recent developments have been made which improve considerably the effectiveness of this device for educational purposes. There is, for example, a quickly developed film involving what is called a magnetic strip. A film can be made of any subject and a completely independent sound track can be put on, used, and when finished, erased and another put on the same film. Thus a series of questions could be worked onto the sound track to provide motivation for students as the film is being shown.

Shifting to other kinds of devices, there is now available at a relatively low cost a device called a group Thinkometer. This is a device having some ten to twenty outlets by which the reaction of a group of people can be obtained quickly. Each outlet, which in a classroom situation would be located at some part of the classroom, contains a switch enabling a student to respond to a question at some one of five levels. All responses are tabulated and indexed electrically as quickly as the switches are thrown at the outlets. Thus the teacher can gain an immediate impression as to how students like or do not like a certain exercise, or what their opinion is of some problem presented to the class.

Another device somewhat more elaborate than the previously described punchboard is a test board developed by the College of Agriculture at the University of Illinois. This test board, operated by electric current, shows to the entire class on a lighted score board the correct and incorrect responses individuals make to a series of questions.

These and the many other devices now available, ranging from maps to audience-reaction indicators, are adaptable to evaluation situations in either a measurement or a teaching capacity. A model of a human body, a reproduction of a masterpiece of painting, a scale model Roman camp, or a tape recording of a class discussion all make appropriate objects of series of questions. The limit on their application is set by cost and the ingenuity of the teacher.

GUIDES TO THE USE OF EVALUATIVE CONCEPTS IN INSTRUCTION

The specific suggestions which have just been given for relating evaluation to instruction could readily degenerate to the level of a bag of tricks, perhaps novel and pleasurable, to the students, but of little real educational significance. It is necessary that a number of broad principles be accepted as guides to the introduction of such materials if a definite sense of purpose is to be maintained in the minds of both the instructor and the students.

Individualization of Instruction

The first principle is that awareness of and adaptation to the varying individual backgrounds, needs, and interests of students is a characteristic of good instruction. Two broad and distinctive approaches to such individualization are possible:

1. The use of information about students to section them into more homogeneous groups.
2. The use of information about students to individualize the course-related activity for each student.

Sectioning of students into supposedly homogeneous subgroups has been and still is a rather common and popular practice. The amount of information used in such sectioning is usually limited in scope to intelligence and prior achievement, although other factors are sometimes considered. Usually this approach involves sectioning, enrollment in different courses, waiving of courses (with or without credit), and similar practices, but subjects each designated subgroup to a uniform program. Only in a program in which the scope of the educational objectives is limited is such an approach to individualization apt to be entirely successful. In general the relation between characteristics is such that a group selected to be reasonably uniform on one or two characteristics will vary almost as much as an unselected group on many other relevant characteristics. Thus a group selected on the basis of superior intelligence and superior achievement in biological science will vary almost as much in interests, attitudes, and adjustment as will an unselected group. Furthermore, the variation of this same group in the various subphases of the biological science content tested, or in the related skills and abilities, will usually be marked.

Such experience with subdividing a group, while discouraging, does not indicate that it is of no value. On the contrary, students critically low in a basic skill such as reading or writing require and deserve special attention, and some if not all of this special attention can be economically provided on a group basis. Unusually capable students also deserve attention which may be similarly provided. It is clear, however, that the subdivision approach cannot entirely solve the problem of individualizing instruction.

The second approach to the individualization issue lies in the use of a close knowledge and understanding of an individual in adapting the assignments and requirements to his individuality. When specific content or specific exercises are not ends in themselves but only means to the attainment of ultimate ends, there can be no objection—other than the practical one of drain on teacher energy—to such variation in the activities of individuals. For example, recognizing that effective writing is the ultimate aim, most communications teachers permit students a considerable range of choice on the topics upon which they write.

Another aspect of the evaluative approach to individualization is involved in suiting to the individual the comments on his work. In correcting student themes, for example, there is a tendency for the instructor to keep in mind certain qualities such as spelling, punctuation, sentence structure, and the like. Comments on a particular paper are apt to be stereotyped annotations which could equally well apply to a dozen other papers. The student senses this and exhibits indifference. Comments unique to a particular theme and student which point up the critical points at which the theme could have been improved have a different effect.

While the evaluative approach is not the only one nor does it necessarily yield all possible techniques, it is clear that it is productive of many ideas for individualizing instruction. Since evaluative thinking is always based on course objectives and is always concerned with the effect on students of an activity, there is insurance also that the practices growing out of such thinking will be truly significant rather than being simply routine busy work.

Motivation

A second principle recognized in good instruction is that students work harder and achieve more when the assigned tasks assume significance for them. There are a number of ways in which students may be assisted in arriving at a realization of the significance of the experiences provided by a course.

Seldom does a student, particularly in a General Education course, become interested in the course content to master it as an end in itself. Indeed, if we are concerned with behavioral objectives such as critical thinking, we may consider such motivation not completely desirable. On the other hand, it accomplishes little to tell students that critical thinking is a major objective of the course. Unless the meaning of such an objective is made clear by many examples and many opportunities to practice it, its meaning and significance will not be discerned by the students, and probably not by the instructor.

Motivation commonly results from active participation. In many classrooms much of the time is monopolized by the instructor, and assignments for work outside the class are frequently indefinite or of the "read the next chapter" variety. Reflection on the part of any instructor will result in an admission that no matter how lucid the written or oral presentation may be, the full significance of any material will not be grasped by most individuals until they attempt to restate it in their own words or apply it to a new situation. The apathy and laziness often attributed to students is often a failure on the part of the instructor to define a concrete, definite series of tasks for the students to carry out. In some areas the preparation of such assignments is considerably more difficult than the "next ten problems" typical of a mathematics course. An evaluative analysis of the relation between daily class work and ultimate objectives should result in development of a number of specific tasks usable both in and out of class to give the student opportunity to replace passive listening by active participation. The techniques suggested earlier exemplify such possibilities.

Students frequently and understandably confuse casual familiarity with mastery. Much of this is a result of our failure to provide circumstances wherein the student's lack of mastery is clearly made evident to him. All too frequently this happens only on a final examination with a definite grade resulting and no incentive, and indeed no opportunity, provided to remedy the situation. In such cases the significance of evaluation as an aid to learning is lost because evaluation has degenerated to a mere marking process. Peer reactions, instructional tests, the Angell-Troyer Self-Scorer, all discussed earlier, exemplify devices whereby self-evaluation by the student can be encouraged at a time in the course when he is still in a position to do something about improvement.

Emphasis on Progress

A reasonably common complaint from students, usually in reference to skills and intellectual abilities, is that the course did not really do anything for them. In connection with writing and speaking, for example, the reaction that no improvement was evident is common on the part of students and even of instructors. In some cases, the criticism may be correct. More commonly, however, it is probable that this judgment is made simply because there is no tangible evidence available from which improvement may be judged. Pretesting has value not only in providing useful information for instruction but also in providing a benchmark against which improvement at later periods may be assessed. The availability of a variety of evaluation devices or tasks which students can attempt when, in their judgment, they are ready is a concrete device to provide assurance of improvement. Such assurance also has profound motivational effect.

Many of the objectives of General Education involve characteristics of individuals much less subject to change than the knowledge factor so commonly measured. In fact, even the increment of knowledge is probably considerably less than has been assumed. At Michigan State College, pretesting with the same comprehensive examinations used for awarding a final grade at the end of a year's course indicated an average initial performance of freshmen of 25-30 per cent correct answers compared with 50-55 per cent correct answers at the end of the year. Even less progress may be expected for intellectual abilities and attitudinal objectives. Hence it becomes necessary that both teachers and students become aware of the impact of a program rather than of specific isolated courses in evaluating changes in regard to many of the objectives of General Education. Changes in some cases may be so gradual that attempts to discern them will meet with failure except as the time elapsed from pretesting to posttesting is extended to two-, four-, or even ten-year periods.

The constructive emphasis on the evaluation of student change or progress is hardly consistent with the threat implied in common testing and grading practice. That evaluation evidence which is used for self-motivation and for evidence of progress cannot usually be successfully used for grading. The finality of the grade makes that the student goal rather than actual achievement, thus diverting his attention from achievement to the means of acquiring a desirable grade.

This situation is particularly evident in regard to the problem of affective outcomes of instruction. The means of testing attitudes, values, and the like are not, and are unlikely to become, so subtle that an alert individual cannot conceal his own reactions in favor of those he believes desired by the instructor. Successful instruction in the affective area consistent with democratic ideals must concentrate on bringing to the individual a realization of his own affective composition and the way it contrasts or deviates from other individuals or from that deemed desirable. This objectivity in self-examination, and the ensuing desire to change can be achieved only in an atmosphere free of threat. Such an atmosphere and approach to affective outcomes can rather successfully eliminate the criticism of indoctrination which is the bane of any sustained systematic attention to affective outcomes.

SUMMARY

With no intent of claiming that all good teaching techniques must stem from evaluative concepts, it nevertheless appears justifiable to argue that the approach to instruction through consideration of the evaluation problems can suggest many specific devices to enrich the learning process. A number of general principles are firmly based in the psychology of learning, commonly accepted by teachers, and closely related to evaluative thinking, which can be evoked to maintain a clear sense of order and purpose while enlarging the range of instructional procedures to admit of many additional practices.

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